Faculty Working Papers

A MULTIOBJECTIVE MODEL FOR ELECTRIC UTILITY RATE REGULATION

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Summary

The interests of the three parties to the regulatory process--the utility investors, the consumers, and the regulators--are often in conflict. Investors are concerned with shareholder wealth maximization while consumers desire dependable service at low rates. If the desired end product of regulation is to establish rates that balance the interests of consumers and investors, then a planning model is needed which accurately reflects the multiobjective nature of the regulatory decision process. This paper develops such a multiobjective programming model for examining the efficient trade-offs available to utility regulators in setting rates of return.

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A MULTIOBJECTIVE MODEL FOR ELECTRIC UTILITY RATE REGULATION

Much of the electric utility regulatory process revolves around the presentation and rebuttal of expert testimony regarding "just and reasonable" rates of return that provide "a balancing of the investor and consumer interests" [2, 603]. More often than not the discrepancy between the rate of return a utility requests and what the regulatory commission staff and consumer intervenors recommend is substantial. Such conflicting views are to be expected because the interests of investors and consumers are often in conflict. Investors are concerned with shareholders wealth maximization while consumers desire dependable service at low rates. Because of the "natural monopoly" status of electric utilities, it is the job of regulatory commissions to resolve this inherent conflict between investors and customers by setting "fair and reasonable" rates.

If the desired end product of regulation is to establish rates that balance the interests of consumers and investors, then a planning model is needed which accurately reflects the multiobjective nature of the regulatory decision process. The purpose of this paper is to develop such a multiobjective programming model for examining the efficient trade-offs available to utility regulators in setting rates of return. The planning model will focus upon the objectives of the three parties to the regulatory process: the utility investors, the consumers, and the regulators. The model will incorporate inflation, anticipated growth rates in user demand, the resulting need for capital expenditures and financing, as well as targets specifying an "appropriate" capital structure,

and dividend policy. By simultaneously considering these factors in conjunction with the utility's need for revenues and customers' desire for low cost but dependable service, the programming model will identify the efficient, nondominated alternatives which "best satisfy" all parties to the regulatory process.

Following a brief overview of the rate regulatory process and the differences between traditional and multiobjective programming models, a multiple criteria utility rate regulation model is developed. An evaluation of the model's efficient solutions are explored next. This analysis describes an evaluation process that regulatory commissions might use in examining the trade-offs between investors and consumers. Concluding comments appear in the last section.

AN ELECTRIC UTILITY RATE REGULATION MODEL

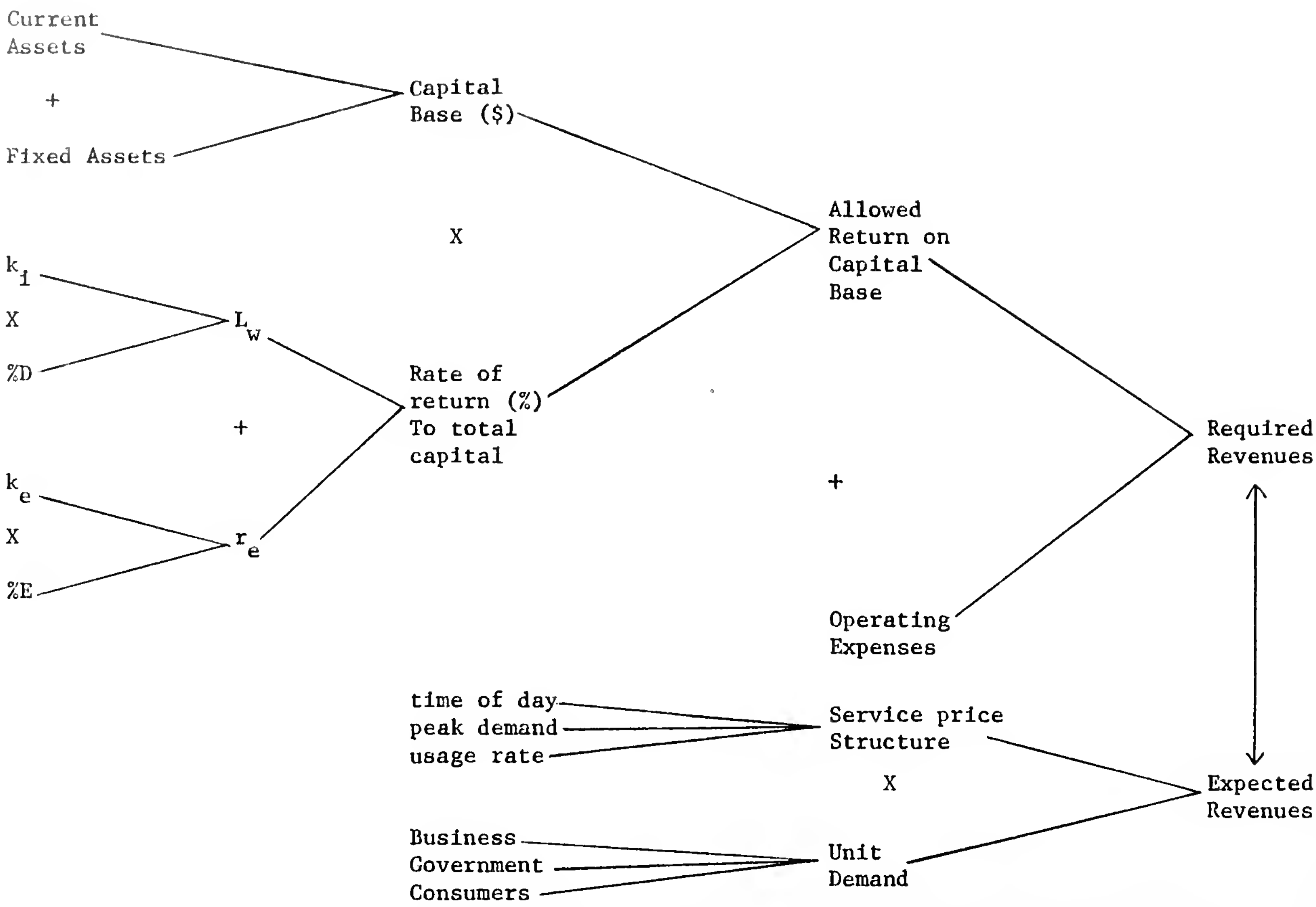
The rate making process acts as a substitute for competitive market mechanisms by determining how prices and services are to be provided at reasonable levels by profit oriented monopolies. Under a market system firms determine their operating and financial risk-return profiles via complex, interdependent decisions. These decisions are based upon the potential market(s) to be served, the alternative product generating function(s) available, and a variety of possible capital structures. Under regulation firms are constrained in the pursuit of risk-return objectives. Commissions regulate electric utilities by approving service price structures that are expected to generate sufficient revenues to allow recovery of operating costs, depreciation, interest and taxes, plus a fair return on equity investment. As such, rate regulation

affects the calculation of required revenues, the prices customers pay, and the stream of cash flows to equity investors.

Exhibit 1 presents a simplified overview of a process designed to establish "just and reasonable" rates of return. To recommend a "rate of return," a commission must first accept an appropriate capital structure for an approved capital base. Then returns on debt and equity capital are established. Finally, a weighted average of these rates is applied to the capital (rate) base. This required return to capital suppliers plus an acceptable level of operating expenses (including depreciation and taxes) determine the required revenues that must be generated. The last step in the regulatory process is to approve a service price structure that will interact with expected demand and generate the needed revenues that allow recovery of operating costs, depreciation, interest and taxes, plus a fair return to equity.

Almost all of the variables shown in Exhibit 1 are subjects of controversy in regulatory proceedings. Perhaps the greatest source of controversy is the "just and reasonable" rate of return to equity holders. Expert witnesses in a rate case often recommend widely differing rates. Other areas of regulatory controversy include the appropriate proportions of debt and equity in the capital structure, the appropriate level of the capital base, the reasonableness of the level of operating expenses, and the service price structure. There is a tendency in current regulatory practice to isolate decision areas. For example, consider the return on rate base issue which is dependent upon a given capital structure. A utility's (current or anticipated) financing policies are taken as given or as independent of the costs of debt and

Exhibit 1: An Overview Of The Rate Regulation Process



k_i = average interest rate on debt

k_e = before tax cost of equity

D = debt

E = equity

L_w = weighted cost of debt

r_e = weighted cost of equity

equity, even though neither theoretical nor practical considerations support such an artificial separation.

Given the interdependencies among many of these areas of controversy, rate regulation requires simultaneous consideration of the decision options facing a utility. Although a static analysis may generate reasonable regulatory decisions, it is difficult to detect if a series of regulatory decisions derived through static or partial equilibrium analysis are suboptimal. Because regulation must reflect the dynamic interdependencies of all policy variables, a simultaneous equations planning model is essential in utility regulation. A successful model should collapse a multi-stage process into a single stage decision which provides simultaneous consideration of the inherent interdependencies encountered in rate regulation.

In a recent article [4] Alexander A. Robichek offered an alternative approach to the conventional regulatory process of determining "just and reasonable" rates which recognized the need for simultaneous consideration of decision options facing a utility. Robichek's proposal followed capital asset pricing model (CAPM) logic and required the following conditions exist:

1. The utility's operating expenses are judged to be reasonable;
2. The utility's expansion policy is appropriate to the needs of the consumers;
3. The utility's financial structure is appropriate;
4. The utility's specific financing choices (e.g., of debt or equity issues) are justified; and
5. The regulation of the utility's rate of return was judged "just and reasonable" as of a previous point of time. This point of time would then serve as the starting point from which to judge the fairness of realized rates.

If these conditions are met, Robichek's regulatory approach would provide a basis for resolving some of the current conflicts in rate making.

The application of this CAPM approach would require a significant change in the current regulation process. More specifically, the approach would require. . .

. . . the utility and the regulators to agree on the specific parameters and time period along which to measure the "just and reasonable" rate of return to equity investors;

. . . the regulators to approve the planned major items of operating expenses, such as salaries, labor contracts, etc., and major capital commitments; and

. . . an agreement as to the appropriate capital structure for the utility and the major financing decisions in the planning period.

Robichek argued his approach to rate-making would eliminate some of the current problems facing regulators while causing a few new ones. Some problems would remain, such as how to compensate efficiency and penalize inefficiency, how to set fair user rate schedules, and how to resolve differences of judgment between the utility and the commission staff. The programming model presented in this paper is a first step toward implementing the Robichek regulatory approach.

A Multiple Objective Approach to Rate Regulation

The two phase multiple objective programming algorithm and computer codes utilized in this study were developed by Ralph E. Steuer [10, 11, 12]. Unlike traditional single objective function linear programming approaches to financial planning [1, 3], phase one of Steuer's multiobjective algorithm attempts to solve the following vector maximization problem:

$$\text{eff}_x\{Cx = Z_c \mid X \in S,\ C \in R^k \times R^n\}.$$

In this problem, S is a feasible region $\{X \in R^n \mid Ax \lesseqgtr b,\ b \in R^m\}$, C is a criteria matrix that linearly relates a vector of decision variables,

x, to a vector of criteria values, Z_c. A is a matrix of technological coefficients that relate the decision variables to a vector of constraint values, b, and eff denotes that all efficient extreme points of S with respect to C are to be found. A point, $\bar{x} \in S$, is defined as efficient if and only if no other feasible point, $\hat{x} \in S$, exists, such that $C\hat{x} \geq C\bar{x}$, $C\hat{x} \neq C\bar{x}$.

Although somewhat tedious, this maximization problem is relatively straightforward. It stipulates that the solution algorithm should generate all possible feasible solutions that simultaneously optimize the specified criteria. However, given the inherent trade-offs of public utility regulation, it is virtually impossible to find a single solution that will optimize all objectives simultaneously. Instead the output of the first phase of Steuer's algorithm provides a set of efficient solutions.

Phase two of the Steuer algorithm utilizes a filtering process on the phase one efficient extreme points' criteria values. Although several filtering options are available in Steuer's computer codes, this study employs the "nondominated" alternative. In this "nondominated mode" a pairwise comparison of all efficient solutions is made. All dominated or inferior points are eliminated until only nondominated solutions remain. Unfortunately an in-depth presentation of the Steuer algorithms is beyond the scope of this study; however, see [10, 11] for an enlightening review.

It is worth emphasizing an important aspect of multiobjective linear programming. These algorithms are capable of dealing only with linear constraints and objective functions. As such,

typical multiplicative relationships such as earnings, price, and dividends per share cannot be incorporated into the model unless one is willing to specify a selling price(s) per share. Because these selling prices do not consider the simultaneous nature of a given solution, their use is suspect. However, given solution values for aggregate book and market value, it is possible to derive per share figures after all nondominated solutions have been determined. Accordingly, it is necessary to filter the nondominated solutions through a second filter, which can incorporate these critical non-linear relationships and determine financially feasible and viable alternatives from the set of efficient, nondominated solutions. A detailed description of this second filtering process is given in the discussion of the model's results.

Formulation of the Model

As in all mathematical models, underlying assumptions are crucial. The majority of our assumptions and the variable definitions are given respectively in Exhibits 2 and 3. In this formulation, Robichek's five criteria mentioned earlier are assumed to hold.

Several aspects of Exhibit 2 are worth noting. The model will span a three year planning horizon. Initially, the utility has a capital base of $2.5 billion, with a debt/equity ratio of 1. During the planning periods, the firm is expected to operate in an environment in which equity investors in electric utilities have a required return of 15 percent, and electric utility stocks sell at a dividend valuation multiple of 10.667. A dividend valuation multiple of 10.667 is consistent with a dividend payout of .75 and the current Standard & Poor utility index price-earnings ratio of 8.

Exhibit 2

Operating and Financial Assumptions and Characteristics of the Model

Beginning Corporate Characteristics:

Debt = \$1,250 Equity = \$1,250 Tax Rate = 48% Cost of Equity Capital = 15% $\frac{\text{Stock Value}}{\text{Dividends}} = 10.667$

Projected Values, Flows, and Expenses During Planning Horizon

Period	Capital $Base_{t-1}$	+	Net $Investment_t$	=	Capital $Base_t$	After-Tax $Investment_t$	-	$Depreciation_t$	=	Net $Investment_t$	Maintenance $Adjustment_t$	Output/Capital $Base_t$	Power $Demand_t$
1	2,500	+	150	=	2,650	500	-	350	=	150	0.0	10.5	26,750
2	2,650	+	250	=	2,900	600	-	400	=	250	.015	10.5	28,075
3	2,900	+	350	=	3,250	800	-	450	=	250	.016	10.5	30,450

Old Debt @ 7.5%: \$ Values

Period t	Book $Value_{t-1}$	-	Sinking $Fund_t$	=	Book $Value_t$	Interest Expense Pre-Tax	Interest Expense After-Tax	Total After-Tax Costs	Total Pre-Tax Costs
1	1,250		25		1,225	93.75	48.75	73.75	141.827
2	1,225		25		1,200	91.875	47.775	72.775	139.952
3	1,200		25		1,175	90.0	46.8	71.8	138.077
			75.0			275.625			419.856

New Debt @ 12%: Coefficient Values per \$ of Debt Issued in Period t

Period After Issuance	Pretax Rate	After-Tax Rate	Sinking Fund After-Tax	Sinking Fund Pre-Tax	Total After-Tax Costs	Total Pre-Tax Costs	Sum Pre-tax Costs	#yrs
0	.12	.0624	.02	.03846	.0824	.15846	.15846	1
1	(1-.02).12 = .1176	.06115	.02	.03846	.08115	.15606	.31452	2
2	(1-.04).12 = .1152	.0599	.02	.03846	.0799	.15336	.46818	3

Exhibit 3

Variable Definitions of the Model

Variable	Definition	Algebraic Formulation	Equation
$\$AR_t$:	After-tax \$ return on beginning rate base in period t	$= CB_{t-1} \times RRB_t \quad \forall_t$	(1)
BVD_3:	Ending book value of all debt outstanding in period 3	$= 1{,}175 + .94\Delta D_1 + .96\Delta D_2 + .98\Delta D_3$	(2)
BVE_3:	Ending book value of "old" and "new" equity outstanding in period 3	$= NW_3 + \Delta E_1 + \Delta E_2 + \Delta E_3$	(3)
CB_t:	Rate Base or Capital Base at end of period t:	$CB_0 = 2{,}500$	(4.1)
		$CB_1 = 2{,}650$	(4.2)
		$CB_3 = 2{,}900$	(4.3)
		$CB_4 = 3{,}250$	(4.4)
CF_t:	Internal Cash Flow before Investment and dividends occuring in period t:	$CF_t = \$AR_t + \text{Depreciation}_t - \text{After-tax Debt Charges} - \text{Maintenance Adjustment}$	
		$CF_1 = \$AR_1 + 350 - 73.75 - .0824\Delta D_1$	(5.1)
		$CF_2 = \$AR_2 + 400 - 72.775 - .08115\Delta D_1 - .0824\Delta D_2 - .015UD_1$	(5.2)
		$CF_3 = \$AR_3 + 450 - 71.8 - .0799\Delta D_1 - .08115\Delta D_2 - .0824\Delta D_3 - .016UD_2$	(5.3)
ΔD_t:	Sale of debt in period t:	$\Delta D_t \quad \forall_t$	
DIV_t:	Total dividends paid in period t:	$DIV_t \quad \forall_t$	
$EBIT_t$:	Earnings before interest and taxes in period t	$= NI_{t/(1-\tau)}$ + total pretax interest expenses in period t	
		$EBIT_1 = NI_{1/.52} + 93.75 + .12\Delta D_1$	(6.1)
		$EBIT_2 = NI_{2/.52} + .91.875 + .1176\Delta D_1 + .12\Delta D_2$	(6.2)
		$EBIT_3 = NI_{3/.52} + 90.0 + .1152\Delta D_1 + .1176\Delta D_2 + .12\Delta D_3$	(6.3)
ΔE_t:	Net \$ of equity sold in period t or "new equity":	$\Delta E_t \quad \forall_t$	
MVE_3:	Market value of equity at the end of period 3	$= 10.667DIV_3$	(7)
NI_t:	Total net income earned in period t	$= CF_t + \text{Sinking Fund Payments}_t - \text{Depreciation}_t$	
		$NI_1 = CF_1 + .02\Delta D_1 + 25 - 350$	(8.1)
		$NI_2 = CF_2 + .02[\Delta D_1 + \Delta D_2] + 25 - 400$	(8.2)
		$NI_3 = CF_3 + .02[\Delta D_1 + \Delta D_2 + \Delta D_3] + 25 - 450$	(8.3)
NW_t:	Net worth of value of "old equity at the end of period t	$= NW_{t-1} + NI_t - DIV_t$	
		$NW_1 = 1{,}250 + NI_1 - DIV_1$	(9.1)
		$NW_2 = NW_1 + NI_2 - DIV_2$	(9.2)
		$NW_3 = NW_2 + NI_3 - DIV_3$	(9.3)

Exhibit 3
(CONTINUED)
Variable Definitions of the Model

Variable	Definition	Algebraic Formulation	Equation
PVBE:	Present value at period 0 of initial and new equity outstanding at the end of period 3	$= 1,250 + \Delta E_1 + \Delta E_{2/(1.15)} + \Delta E_{3/(1.15)^2}$	(10)
RRB_t:	Return on rate base or capital base in period t:	$RRB_t \quad V_t$	
\$ROP:	Value in \$ of regulatory overpricing at the end of period 3	$= \$ROP - \$RUP = MVE_3 - BVE_3$	(11)
\$RUP:	Value in \$ of regulatory underpricing at the end of period 3:		
TDIV:	Total dividends paid during the planning periods	$= DIV_1 + DIV_2 + DIV_3$	(12)
TEBIT:	Total earnings before interest and taxes during the planning periods	$= EBIT_1 + EBIT_2 + EBIT_3$	(13)
TFC:	Total debt related fixed charges incurred during the planning periods	$= .46818\Delta D_1 + .31452\Delta D_2 + .15846\Delta D_3 + 419.856$	(14)
TNI:	Total net income earned during the planning periods	$= NI_1 + NI_2 + NI_3$	(15)
τ:	Corporate tax rate	$= .48$	
UD_t:	Unfulfilled consumer demand occuring in period t:	UD_t = anticipated demand_t - generating capacity_t	
		$UD_1 = 26,750 - 10.5CB_0$	(16.1)
		$UD_2 = 28,075 - 10.5CB_1$	(16.2)
		$UD_3 = 30,450 - 10.5CB_2$	(16.3)

Significant growth in power demand is anticipated during the planning horizon. To accomodate this growth, major additions to the capital base are needed. Although somewhat artificial, all investments are assumed to occur at the beginning of each planning period; however as seen in equation (1) in Exhibit 3, the after-tax allowed dollar return in a given period is calculated on the basis of the previous period's ending capital base.

Equations (2) and (3) define the ending book values of debt and equity in period three. Equations (4.1) through (5.3) provide the values for end of period capital base and internal cash flow, respectively, for each period. Similarly, (6.1) through (8.3) define respective period values for earnings before interest and taxes calculated at a 48 percent rate, ending equity market value, and total dollar net income. Equations (9.1) through (9.3) define end of period net worth. In order to facilitate analysis of phase two filtering results, it was necessary to distinguish betwen "internal" and "external" equity funds for valuation purposes.

In equation (10) the period 0 present value of equity book value is defined. Equation (11) introduces two regulatory variables that proxy the efficiency of regulation via the discrepancy between book and market values. Equations (12) through (15) define total cumulative dividends, earnings before interest and taxes, debt related fixed charges, and net income, respectively, during the three year planning horizon. Equations (16.1) through (16.3) define per period unfulfilled consumer demand. From a technical viewpoint, this unfulfilled demand will be met by foregoing normal maintenance (downtime) procedures. However, the additional operating expenses associated with poor maintenance

will cause "unfulfilled" demand to drain cash flows in subsequent periods (see equations (5.2) and (5.3)). Four final variables require definition: ΔD_t, DIV_t, ΔE_t, and RRB_t. Respectively these are defined in period t to be sale of debt in dollars, total dollar dividends paid, net dollar value (after floatation costs) of equity sold, and return on beginning rate base.

Objective Function Formulation

For operational purposes, the utility regulation model has five goals that are attributable to three constituencies. These constituencies, goal descriptions, and algebraic formulations are given in Exhibit 4. Equation (17) specifies a consumer oriented goal that attempts to minimize total allowed dollar returns during each of the planning periods.

Shareholder or corporate goals are specified in equations (18) through (20). The first corporate goal states that the algorithm should maximize the discounted present value of all future cash flows that accrue to shareholders as dividends. The last term in this equation represents an ending market value of aggregate equity determined by the 10.667 dividend multiple given earlier in Exhibit 2. The second shareholder goal is given in equation (10). This goal attempts to minimize possible dilution of existing equity by minimizing the sale of common stock. The final corporate goal is seen in (20); this criterion maximizes future internal corporate cash flow during the planning horizon.

Equation (21) specifies the remaining goal or criterion of the model. It attempts to supress regulatory excess or perniciousness by equating aggregate equity book and market values.

Exhibit 4

Objective Function Formulations of the Model

Constituency	Criterion	Algebraic Formulation	
Consumers:	Minimize total allowed return in dollars	Min: $Z_1 = \$AR_1 + \$AR_2 + \$AR_3$	(17)
Shareholders:	Maximize Present Value of Total Corporate Dividends	Max: $Z_2 = \frac{DIV_1}{(1.15)} + \frac{DIV_2}{(1.15)^2} + \frac{DIV_3 + 10.667DIV_3}{(1.15)^3}$	(18)
Shareholders:	Minimize possible dilution of existing equity by avoiding sale of common stock	Min: $Z_3 = \Delta E_1 + \Delta E_2 + \Delta E_3$	(19)
Shareholders:	Maximize corporate cash flow	Max: $Z_4 = CF_1 + CF_2 + CF_3$	(20)
Regulatory Agency:	Equate book value into market value of equity	Min: $Z_5 = \$ROP + \$RUP$	(21)

Given the conflicting nature of these five goals, it is apparent that the ability to compromise and incorporate trade-offs in the regulatory process is essential. In order to accommodate this flexibility requirement, the model has four sets of operational and financial constraints designed to specify reasonable ranges for corporate and regulatory policies. These constraint sets are given in Exhibit 5.

Equations (22) - (24.2) specify the five sets of regulatory constraints. In (22) upper and lower limits on the annual returns on beginning capital bases are given. In addition (23.1) and (23.2) provide maximum limits of 25 basis points on annual changes in returns on appropriate capital bases. The final two regulatory constraints place upper and lower limits on the ratio of equity market to book value. Equation (24.1) limits the aggregate period zero market value, less the aggregate present value of "new" stock, to be less than or equal to 110% of beginning equity book value. In similar fashion (24.2) states that these present values should be at least 90% of beginning equity book value.

The next two sets of the model's constraints are related to corporate dividend as well as financial leverage and coverage policies. Equation (25) limits the annual maximum dividend payout to be no greater than 75%, while (26) specifies a minimum dividend yield on all equity sources to be 10%. Maximum and minimum debt/equity ratios of 1.105 and .905 respectively are outlined in equations (27.1) through (28.3). Finally, minimum annual fixed coverage charges of 1.5 are given in (29.1) through (29.3).

The last two sets of constraints are given in (30.1) through (31.3). These require that each period's ending assets equal total liabilities and that all sources of cash equate to all uses in each planning period.

Exhibit 5

Constraints of Multiple Criterion Model

REGULATORY

Minimum and Maximum allowable returns on the rate base:

$$.09 \leq RRB_t \leq .11 \qquad \forall_t \tag{22}$$

Maximum year to year change in return on rate base

$$RRB_t - RRB_{t-1} \leq .0025 \quad (t = 2,3) \tag{23.1}$$

$$RRB_t - RRB_{t+1} \leq .0025 \quad (t = 1,2) \tag{23.2}$$

Period market value - present value of "new" stock should not exceed 110% of period 0 equity book value

$$\frac{DIV_1}{(1.15)} + \frac{DIV_2}{(1.15)^2} + \frac{DIV_3 + 10.667DIV_3}{(1.15)^3} - \Delta E_1 - \frac{\Delta E_2}{(1.15)} - \frac{\Delta E_3}{(1.15)^2} \leq 1,375 \tag{24.1}$$

Period 0 market value - present value of "new stock" must be at least 90% of period 0 equity book value

$$\frac{DIV_1}{(1.15)} + \frac{DIV_2}{(1.15)^2} + \frac{DIV_3 + 10.667DIV_3}{(1.15)^3} - \Delta E_1 - \frac{\Delta E_2}{(1.15)} - \frac{\Delta E_3}{(1.15)^2} \geq 1,125 \tag{24.2}$$

DIVIDEND POLICY

Maximum Dividend Payout of 75%

$$DIV_t \leq .75NI_t \qquad \forall_t \tag{25}$$

Minimum Dividend Yield of 10%

$$DIV_t \geq .1NW_t + .1 \sum_{T=1}^{t} \Delta E_T \qquad \forall_t \tag{26}$$

FINANCIAL LEVERAGE COVERAGE

Maximum debt ceiling: do not allow debt/equity ratio to exceed 1.105 in any year

$$t = 1 \quad 1.105[NW_1 + \Delta E_1] \geq 1,225 + .98\Delta D_1 \tag{27.1}$$

$$t = 2 \quad 1.105[NW_2 + \Delta E_1 + \Delta E_2] \geq 1,200 + .96\Delta D_1 + .98\Delta D_2 \tag{27.2}$$

$$t = 3 \quad 1.105[NW_3 + \Delta E_1 + \Delta E_2 + \Delta E_3] \geq 1,175 + .94\Delta D_1 + .96\Delta D_2 + .98\Delta D_3 \tag{27.3}$$

Minimum debt limits: do not allow debt/equity ratio to fall below .905 in any year

$$t = 1 \quad .905[NW_1 + \Delta E_1] \leq 1,225 + .98\Delta D_1 \tag{28.1}$$

$$t = 2 \quad .905[NW_2 + \Delta E_1 + \Delta E_2] \leq 1,200 + .96\Delta D_1 + .96\Delta D_2 \tag{28.2}$$

$$t = 3 \quad .905[NW_3 + \Delta E_1 + \Delta E_2 + \Delta E_3] \leq 1,175 + .94\Delta D_1 + .96\Delta D_2 + .98\Delta D_3 \tag{28.3}$$

Fixed charge coverage should be at least 1.5 in each year

$$t = 1 \quad .667EBIT_1 \geq .15846\Delta D_1 + 141.827 \tag{29.1}$$

$$t = 2 \quad .667EBIT_2 \geq .15606\Delta D_1 + .15846\Delta D_2 + 139.952 \tag{29.2}$$

$$t = 3 \quad .667EBIT_3 \geq .15366\Delta D_1 + .15606\Delta D_2 + .15846\Delta D_3 + 138.007 \tag{29.3}$$

SOURCES OF FUNDS EQUAL USES

Assets equal liabilities for each period

$$t = 1 \quad CB_1 = NW_1 + \Delta E_1 + 1,225 + .98\Delta D_1 \tag{30.1}$$

$$t = 2 \quad CB_2 = NW_2 + \Delta E_1 + \Delta E_2 + 1,200 + .96\Delta D_1 + .98\Delta D_2 \tag{30.2}$$

$$t = 3 \quad CB_3 = NW_3 + \Delta E_1 + \Delta E_2 + \Delta E_3 + 1,175 + .94\Delta D_1 + .96\Delta D_2 + .98\Delta D_3 \tag{30.3}$$

Sources of cash equal uses of cash for each period

$$t = 1 \quad \Delta E_1 + \Delta D_1 - DIV_1 + CF_1 = 500 \tag{31.1}$$

$$t = 2 \quad \Delta E_2 + \Delta D_2 - DIV_2 + CF_2 = 650 \tag{31.2}$$

$$t = 3 \quad \Delta E_3 + \Delta D_3 - DIV_3 + CF_3 = 800 \tag{31.3}$$

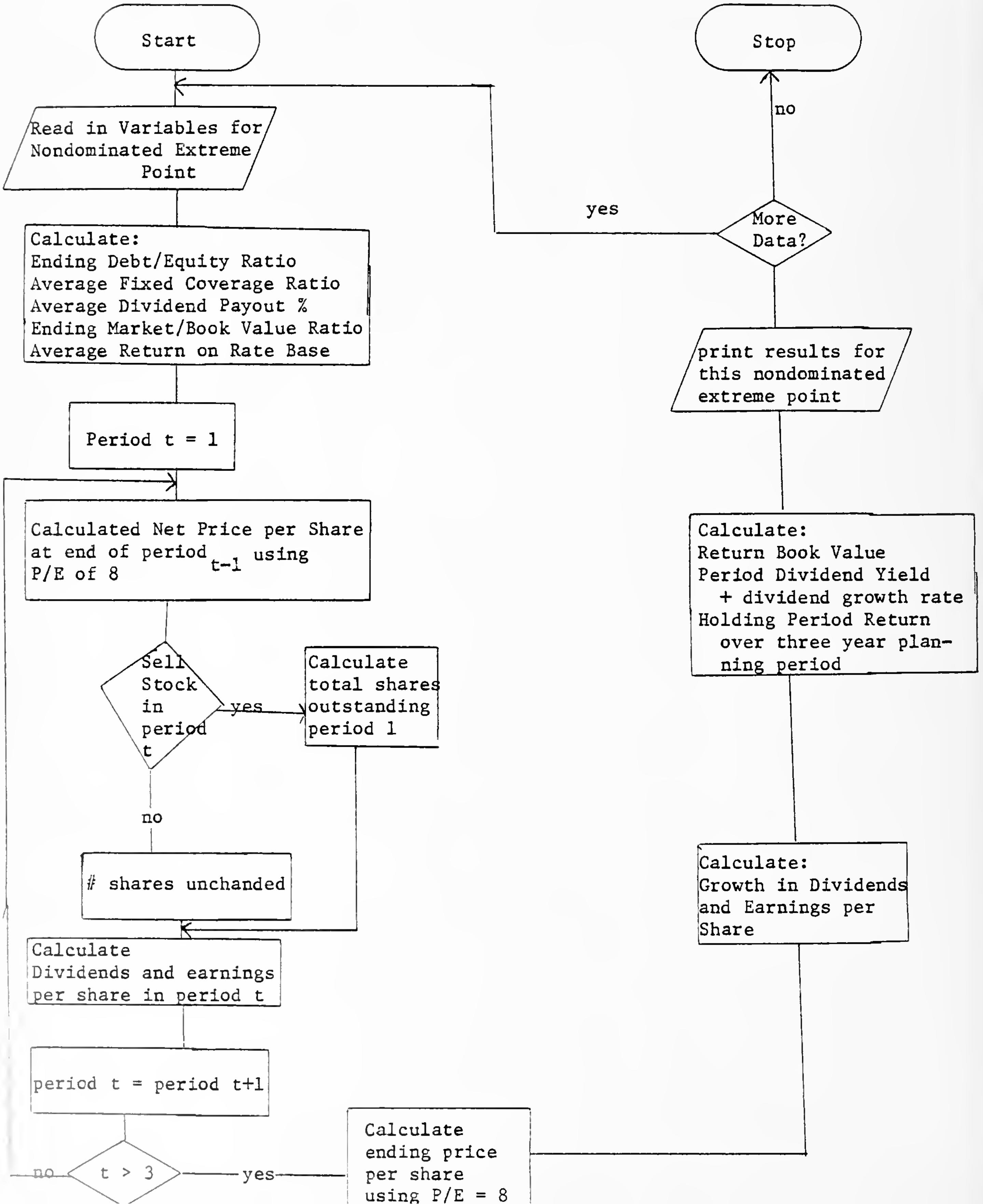
THE RESULTS

The initial filtering phase generated 224 nondominated extreme points from over 352 efficient solutions. The linear requirements of the Steuer algorithm did not allow calculation of per share data [such as earnings per share (EPS), dividends per share (DPS), book value per share (BVPS)] or profitability and leverage ratios to aid in the evaluation of the relative attractiveness of the 224 nondominated extreme points. This was done outside the Steuer algorithm using assumptions consistent with the original model and financial theory. A flow chart of the second filtering phase is contained in Exhibit 6. Values generated by the Steuer algorithm permitted calculation of the ending debt/equity ratio, return on book value, average fixed coverage ratio, average dividend payout percentage, ending market/book value ratio, and the average return on rate base. Share data were derived after first estimating the number of equity shares issued to raise the amount of common stock financing in each time period for each Steuer algorithm solution. A stock market price at time period zero (P_0) was estimated by multiplying time period zero BVPS ($BVPS_0$) by the ending (aggregate) market/book value ratio from the Steuer algorithm. This price determination procedure assumes investors will correctly anticipate the performance of the firm in the three year planning horizon. The selling price of a common share at the beginning of time period one (SP_1) is .95 P_0 to allow for market pressure and selling costs.

The number of common shares outstanding in time period one is calculated by adding the number of shares at the beginning of the period and the number issued at SP_1 to raise the amount of common

Exhibit 6

Flow Chart of the Second Filtering Phase



stock financing in period one. EPS_1 and DPS_1 can then be derived and provide the inputs for estimating P_1 and SP_2 as follows:

$$P_1 = 8.0\ EPS_1;\ \text{and}$$

$$SP_2 = (.95)(P_1) = (.95)(8.0\ EPS_1).$$

The 8.0 P/E valuation multiple is admittedly a somewhat arbitrary choice. However, a valuation procedure outside the Steuer algorithm is a necessity if share data are to be considered in evaluating the 224 nondominated extreme points.

EPS_t, DPS_t, P_t, and SP_t values are estimated in similar fashion for periods two and three. These share data allow estimation of investor related variables such as the growth in EPS (G_{eps}) and DPS (G_{dps}), and the holding period return realized by investors over the three period planning horizon. Share data also permit estimation of equity investors' required rate of return (k_e) using the Gordon infinite horizon DCF model.

The 224 nondominated extreme points were based on linear constraints and objective functions. The introduction of the multiplicative relationships of EPS, DPS, and price per share had a dramatic impact on the financial viability of the nondominated solution points. In evaluating the 224 nondominated solutions, two realistic financial constraints were introduced to assure feasibility:

(1) $DPS_1 \leq DPS_2 \leq DPS_3$; and

(2) $[(1+g_{EPS}) - g_{DPS}]^{10} \left[\begin{matrix}\text{Average}\\ \text{Payout Ratio}\end{matrix}\right] \leq .75.$

The dividend constraint precludes any reduction in DPS over the planning period while the second constraint assures that any disparity between G_{eps} and G_{dps} will be sustainable over a decade without causing the dividend payout ratio to exceed the .75 limit contained in the original model. Only seven of the 224 nondominated extreme point solutions met these two financial feasibility constraints.

Financial data for these seven feasible solutions are organized in Exhibit 8 to reflect the particular interests of the various parties to the rate regulatory process. Similar data for all 224 nondominated efficient solutions are presented in Appendices 1 and 2. Spearman rank order correlation coefficients measuring the correspondence between the (low to high) rankings of each financial variable in Exhibit 7 plus a variable for the volume of common stock issued are shown in Exhibit 8. As might be anticipated with a simultaneous equation model, the systematic associations between the variable have the expected signs and are often significant even when tested with a nonparametric measure.

The data contain few surprises. Return on book value is systematically related to the allowed return on rate base and the debt/equity ratio. Coverage ratios track well with debt/equity ratios. EPS and DPS growth rates as well as the payout and coverage ratios are consistent with the utility industry.

However, only three of the nondominated extreme point solutions, numbers 57, 124, and 204, appear to provide plausible planning guides. Even for these three solutions, the relationships between some of the variables may not appear consistent with traditional rate base regulatory procedures. For example, the utility represented by extreme point 57 would

Exhibit 7

Selected Variables Associated With Nondominated Efficient Solutions

NONDOMINATED	UTILITY					CONSUMERS	INVESTORS			REGULATORY COMMISSION
EXTREME POINT	Return on Book Value	Debt to Equity	Fixed Coverage	Payout Ratio	k_e	Return on Rate Base	HPR	Growth in EPS	Growth in DPS	Market to Book
57	.1568	1.105	3.023	.657	.1429	10.876	.102	.0415	.0535	1.067
124	.1551	1.105	2.987	.666	.1416	10.762	.098	.0510	.0520	1.067
204	.1444	1.105	2.816	.727	.1363	10.083	.085	.0353	.0385	1.067
286	.1406	1.105	2.728	.750	.1221	9.899	.047	.0179	.0179	1.067
338	.1407	1.004	2.810	.750	.1223	9.659	.048	.0182	.0182	1.067
339	.1371	1.105	2.606	.750	.1216	9.796	.046	.0171	.0171	1.067
352	.1371	1.091	2.616	.750	.1216	9.805	.046	.0172	.0172	1.067

Exhibit 8

Rank Correlations Between Selected Variables of Financially Feasible Nondominated Efficient Solution

	Return on Rate Base	Return on Book Value	Debt Equity Ratio	Fixed Coverage Ratio	Payout Ratio	HPR	Growth Rate EPS	Growth Rate DPS	Increase in Common Stock	k_e
Return on Rate Base	1.00									
Return on Book Value	.95*	1.00								
Debt/Equity Ratio	.52	.27	1.00							
Fixed Coverage Ratio	.95**	1.00**	.27	1.00						
Payout Ratio	-.91*	-.91*	-.52	-.91*	1.00					
HPR	.96**	.99**	.34	.99**	.91*	1.00				
EPS Growth Rate	.92*	.96**	.27	.96**	-.87*	.95	1.00			
DPS Growth Rate	.95**	1.00	.27	1.00**	-.91*	.99**	.96**	1.00		
Increase in Common Stock	-.88*	-.75	-.80*	-.75	.91*	-.77	-.71	-.75	1.00	
$ke_0 = D_1/P_0 + g_{dps}$	.96**	.99**	1.00**	.99**	-.91*	1.00	.95**	.99	-.77	1.00

have to have a pre-tax debt cost that exceeded stockholders' required return (k_e) of 14.29 percent in order to have a weighted average cost of capital equal to the average 10.876 percent return on rate base. Of course an allowed return on rate base in excess of the firm's cost of capital would certainly explain a market/book ratio greater than unity.

A partial explanation of this apparent disparity revolves around the existence of a sinking fund in the model which increases the required return on the rate base by nearly 2.0 percent. In addition, traditional analyses focuses on end of period values while the return on rate base percentage is an average of beginning of period rates.

Solution points 57, 124, and 204 have stockholder required rates of return ($k_e = D_1/P_0 + G_{dps}$) that exceed projected holding period returns (HPR). This relationship is consistent with what has occurred with electric utility stocks in the past decade, but it is not descriptive of a well functioning rate regulatory process.

CONCLUDING OBSERVATIONS

The interests of the three parties to the regulatory process--the utility investors, the consumers, and the regulators--are often in conflict. Investors are concerned with shareholder wealth maximization while consumers desire dependable service at low rates. If the desired end product of regulation is to establish rates that balance the interests of consumers and investors, then a planning model is needed which accurately reflects the multiobjective nature of the regulatory decision process. This paper develops such a multiobjective programming model for examining the efficient trade-offs available to utility regulators in setting rates of return.

Generally the initial runs of the model are promising and supportive of a simultaneous decision approach to rate regulation. There are several possible explanations for some of the abberations in the data. The dynamics of the evaluation procedures need further study. Ultimately a nonlinear programming model may be required in order for multiplicative share data manipulations and valuation to become an integral part of the primary model. Another area for study is the impact rapid growth in the capital budget may have upon economic rates of return and reported accounting returns. Study of this phenomena which has been explored elsewhere [5, 9] may provide a partial explanation of some of the low HPR-high return on book value combinations in Exhibit 8. This phenomena may also give insight into the impact of inflation on utility regulation and operation.

M/E/225

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APPENDIX 1

NONDOMINATED EXTREME POINT NUMBER	UTILITY				INVESTORS			REGULATORY COMMISSION	CONSUMERS
	DEBT TO EQUITY	FIXED COVERAGE	PAYOUT RATIO	RETURN ON BV	HPR	GROWTH OF EPS	GROWTH OF DPS	MARKET TO BOOK VALUE	RETURN ON RATE BASE
2	1.0309	3.1649	.6570	.1582	.114	.0132	.0546	1.0666700	11.0000
5	1.1050	3.0561	.6471	.1584	.104	.0230	.0542	1.0666700	11.0000
6	1.1050	3.0531	.6492	.1581	.104	.0187	.0535	1.0666700	10.9772
7	1.1050	3.0595	.6501	.1585	.127	.0227	.0598	1.0793669	11.0000
8	.9050	3.2702	.6659	.1559	.131	-.0040	.0555	1.0666700	11.0000
10	1.0309	3.1649	.6992	.1603	-.069	.0132	-.0406	1.0666700	11.0000
13	1.0399	3.1320	.6635	.1567	.116	-.0033	.0523	1.0666700	10.9099
14	1.0342	3.1624	.6607	.1582	.147	.0129	.0624	1.0843923	11.0000
16	1.1050	3.0561	.6898	.1606	-.078	.0230	-.0413	1.0666700	11.0000
17	1.1050	3.0531	.6919	.1602	-.076	.0187	-.0415	1.0666700	10.9772
18	1.1050	3.0595	.6927	.1607	-.068	.0227	-.0359	1.0793669	11.0000
19	1.1050	2.9659	.6381	.1567	.119	.0153	.0586	1.0666700	11.0000
22	1.1050	3.0341	.6544	.1568	.106	.0051	.0518	1.0666700	10.9099
23	1.1050	3.0312	.6552	.1571	.105	.0332	.0535	1.0666700	10.8995
26	1.1050	3.0376	.6561	.1575	.127	.0372	.0598	1.0793669	10.9224
27	.9050	3.2702	.6730	.1559	.191	-.0053	.0691	1.0972558	11.0000
28	.9050	3.2468	.6720	.1550	.129	.0097	.0550	1.0666700	10.9224
29	.9050	3.2702	.7077	.1580	-.057	-.0040	-.0397	1.0666700	11.0000
32	.9050	3.2431	.6730	.1543	.134	-.0208	.0535	1.0666700	10.9099
33	1.0353	3.1390	.6680	.1573	.156	.0267	.0646	1.0904258	10.9224
35	1.0309	3.0956	.6759	.1549	.104	.0396	.0515	1.0666700	10.7624
36	1.0399	3.1094	.6696	.1557	.114	.0104	.0519	1.0666700	10.8323
37	1.0309	3.1649	.7232	.1609	-.072	.0085	-.0450	1.0666700	11.0000
38	1.0349	3.1619	.7036	.1604	-.054	.0128	-.0319	1.0880371	11.0000
39	1.0309	3.1409	.7060	.1590	-.071	.0113	-.0424	1.0666700	10.9177
41	1.0399	3.1320	.7061	.1588	-.064	-.0033	-.0427	1.0666700	10.9099
46	1.0489	3.0753	.5767	.1538	.112	-.0219	.0480	1.0666700	10.7376
47	1.0441	3.1288	.6682	.1567	.157	-.0038	.0624	1.0896733	10.9099
48	1.1050	3.0578	.7185	.1614	-.081	.0174	-.0465	1.0666700	11.0000
49	1.1050	3.0390	.6979	.1591	-.071	.0051	-.0431	1.0666700	10.9099
51	1.1050	2.9347	.6430	.1555	.121	.0291	.0592	1.0666700	10.9224
52	1.1050	2.9659	.6407	.1567	.141	.0148	.0640	1.0784938	11.0000
57	1.1050	3.0230	.6569	.1568	.102	.0415	.0535	1.0666700	10.8764
58	1.1050	3.0306	.6532	.1571	.097	.0212	.0520	1.0666700	10.9177
61	1.1050	3.0171	.6610	.1559	.106	.0194	.0517	1.0666700	10.8323
62	1.1050	3.0416	.6593	.1569	.141	.0042	.0605	1.0862547	10.9099
63	1.1050	2.9799	.6676	.1537	.103	-.0152	.0474	1.0666700	10.7376
64	1.1050	3.0122	.6605	.1558	.106	.0194	.0518	1.0666700	10.8323
65	1.1050	3.0341	.6587	.1568	.142	.0043	.0607	1.0866747	10.9099
68	1.1050	3.0386	.6578	.1575	.140	.0369	.0629	1.0865222	10.9224
69	1.1050	3.0306	.6575	.1571	.132	.0204	.0608	1.0864035	10.9177
73	.9050	3.2454	.6807	.1547	.189	-.0084	.0684	1.1025565	10.9177
75	.9050	3.2702	.7155	.1580	-.031	-.0055	-.0259	1.1007303	11.0000
76	.9050	3.2468	.6804	.1550	.201	.0081	.0712	1.1030063	10.9224
77	.9050	3.2431	.6814	.1543	.205	-.0224	.0696	1.1030966	10.9099
78	.9050	3.1987	.6848	.1527	.116	.0210	.0515	1.0666700	10.7624
79	.9050	3.2468	.7073	.1567	-.041	.0097	-.0265	1.0666700	10.9224
80	.9050	3.2197	.6791	.1533	.132	-.0073	.0530	1.0666700	10.8323
83	.9050	3.2702	.7314	.1586	-.060	-.0086	-.0441	1.0666700	11.0000
84	.9050	3.2431	.7151	.1563	-.051	-.0208	-.0416	1.0666700	10.9099
87	.9050	3.1912	.6868	.1514	.127	-.0406	.0483	1.0666700	10.7376
88	1.0374	3.0968	.6834	.1550	.169	.0389	.0679	1.1020393	10.7624
92	1.0399	3.1094	.7057	.1574	-.049	.0104	-.0295	1.0666700	10.8323
93	1.0517	2.9129	.7250	.1459	.088	.0295	.0396	1.0666700	10.1847
94	1.0638	2.9014	.7253	.1454	.098	-.0033	.0385	1.0666700	10.1732
95	1.0352	3.1617	.7279	.1610	-.056	.0081	-.0357	1.0898400	11.0000
96	1.0399	3.1320	.7303	.1594	-.067	-.0079	-.0471	1.0666700	10.9099
99	1.0448	3.1283	.7116	.1589	-.045	-.0038	-.0319	1.0933376	10.9099
100	1.0359	3.1372	.7116	.1591	-.052	.0108	-.0315	1.0936020	10.9177
104	1.0489	3.0753	.7203	.1559	-.061	-.0219	-.0466	1.0666700	10.7376
107	1.0517	2.9579	.7107	.1480	.094	-.0001	.0411	1.0666700	10.3400
108	1.0551	3.0708	.6839	.1539	.171	-.0226	.0629	1.1006272	10.7376
109	1.0638	2.9463	.7110	.1475	.103	-.0315	.0399	1.0666700	10.3285
110	1.1050	3.0604	.7227	.1614	-.067	.0166	-.0385	1.0862422	11.0000
111	1.1050	3.0390	.7263	.1598	-.075	-.0005	-.0434	1.0666700	10.9099
112	1.1050	3.0429	.7032	.1591	-.054	.0041	-.0337	1.0900660	10.9099
113	1.1050	2.9968	.7132	.1561	-.067	-.0152	-.0470	1.0666700	10.7376
115	1.1050	2.9347	.6470	.1555	.156	.0284	.0673	1.0846557	10.9224
116	1.1050	2.8761	.6541	.1529	.113	.0410	.0571	1.0666700	10.7624
124	1.1050	2.9869	.6656	.1551	.098	.0510	.0520	1.0666700	10.7624
127	1.1050	2.8721	.7124	.1464	.098	-.0287	.0385	1.0666700	10.2544
128	1.1050	3.0008	.6766	.1541	.159	-.0165	.0613	1.0981094	10.7276
129	1.1050	2.8280	.7271	.1443	.095	.0004	.0375	1.0666700	10.0991
130	1.1050	3.0204	.6669	.1560	.153	.0182	.0632	1.0925625	10.8323
131	1.1050	2.9799	.6748	.1537	.160	-.0166	.0618	1.0993116	10.7376
132	1.1050	2.8337	.7084	.1457	.096	-.0290	.0382	1.0666700	10.2545
133	1.1050	3.0122	.6662	.1558	.154	.0183	.0635	1.0930290	10.8323
134	1.1050	2.7902	.7230	.1436	.096	.0010	.0382	1.0666700	10.0992
137	1.1050	2.9950	.6734	.1552	.156	.0494	.0660	1.0986443	10.7624
140	1.1050	2.9869	.6727	.1551	.157	.0495	.0664	1.0991120	10.7624
141	.9050	3.2128	.7117	.1571	-.028	-.0047	-.0240	1.1033347	11.0000
142	1.1050	3.0376	.6944	.1593	-.042	.0368	-.0178	1.0897928	10.9224
144	.9050	3.2454	.7237	.1567	-.031	-.0085	-.0266	1.1060310	10.9177
146	.9050	3.2149	.6904	.1523	.204	-.0276	.0688	1.1091359	10.8163
149	.9050	3.1987	.6960	.1527	.208	.0189	.0723	1.1140575	10.7624
150	.9050	3.2702	.7396	.1586	-.034	-.0102	-.0298	1.1024482	11.0000
151	.9050	3.2431	.7244	.1563	-.021	-.0225	-.0255	1.1065712	10.9099
152	.9050	3.2468	.7164	.1567	-.008	.0080	-.0104	1.1059185	10.9224
153	.9050	3.2197	.6891	.1533	.215	-.0092	.0716	1.1088471	10.8323
155	.9050	3.1987	.7138	.1541	-.026	.0210	-.0156	1.0666700	10.7624
156	.9050	3.2197	.7148	.1550	-.035	-.0073	-.0284	1.0666700	10.8323
157	.9050	3.1161	.7079	.1480	.118	-.0162	.0449	1.0666700	10.4884
159	.9050	3.2454	.7312	.1571	-.063	-.0100	-.0455	1.0666700	10.9177
161	.9050	3.1912	.7299	.1534	-.049	-.0406	-.0463	1.0666700	10.7376
163	.9050	3.2431	.7391	.1569	-.054	-.0254	-.0460	1.0666700	10.9099
164	.9050	3.0714	.7211	.1457	.099	-.0219	.0388	1.0666700	10.3400
165	.9050	3.1912	.6899	.1514	.148	-.0411	.0540	1.0794379	10.7376
166	.9050	3.1629	.6946	.1500	.123	-.0432	.0461	1.0666700	10.6437
168	1.0593	2.9446	.7283	.1481	.209	.0305	.0709	1.1329376	10.3122
170	1.0458	3.1050	.7124	.1575	-.023	.0098	-.0164	1.0938135	10.8323
171	1.0604	3.0045	.7056	.1510	.196	.0032	.0676	1.1170211	10.5217
172	1.0517	2.9129	.7392	.1465	.019	.0295	.0083	1.0666700	10.1847
173	1.0638	2.9014	.7446	.1463	.010	-.0033	-.0033	1.0666700	10.1732
174	1.0638	2.8702	.7357	.1438	.092	.0054	.0365	1.0666700	10.0653
175	1.0606	2.9069	.7359	.1461	.166	.0285	.0603	1.1145599	10.1847
176	1.0451	3.1281	.7362	.1595	-.048	-.0085	-.0357	1.0951502	10.9099
179	1.0489	3.0753	.7375	.1564	-.063	-.0251	-.0437	1.0666700	10.7376
181	1.0558	3.0703	.7282	.1560	-.034	-.0227	-.0315	1.1043149	10.7376
185	1.0638	2.9463	.7447	.1490	-.030	-.0315	-.0315	1.0666700	10.3285
186	1.0599	2.9726	.7173	.1492	.197	.0001	.0677	1.1246575	10.4100

NONDOMINATED EXTREME POINT NUMBER	UTILITY: DEBT TO EQUITY	UTILITY: FIXED COVERAGE	UTILITY: PAYOUT RATIO	UTILITY: RETURN ON BV	INVESTORS: HPR	INVESTORS: GROWTH OF EPS	INVESTORS: GROWTH OF DPS	REGULATORY COMMISSION: MARKET TO BOOK VALUE	CONSUMERS: RETURN ON RATE BASE
187	1.0638	2.9151	.7209	.1459	.098	-.0236	.0381	1.0666700	10.2206
188	1.0606	2.9518	.7213	.1481	.174	-.0011	.0620	1.1145589	10.3400
189	1.0609	3.0325	.6952	.1522	.182	-.0255	.0641	1.1087324	10.6195
191	1.1050	3.0423	.7318	.1598	-.057	-.0015	-.0381	1.0922340	10.9099
192	1.1050	3.0393	.7237	.1601	-.046	.0307	-.0227	1.0919282	10.9224
193	1.1050	2.9968	.7341	.1566	-.070	-.0191	-.0508	1.0666700	10.7376
194	1.1050	3.0209	.7041	.1578	-.032	.0180	-.0177	1.0957568	10.8323
195	1.1050	3.0013	.7213	.1562	-.042	-.0167	-.0329	1.1019206	10.7376
196	1.1050	2.8721	.7445	.1478	-.028	-.0287	-.0287	1.0666700	10.2544
197	1.1050	2.9954	.7036	.1567	-.013	.0492	-.0009	1.1012217	10.7624
198	1.1050	2.8761	.6608	.1529	.173	.0397	.0706	1.0970003	10.7624
199	1.1050	2.7561	.6826	.1465	.105	.0315	.0501	1.0666700	10.3967
202	1.1050	2.7387	.6906	.1448	.098	-.0051	.0442	1.0666700	10.3137
203	1.1050	2.8600	.7131	.1465	.088	.0044	.0394	1.0666700	10.2384
204	1.1050	2.8160	.7278	.1444	.085	.0353	.0385	1.0666700	10.0832
205	1.1050	2.7463	.7354	.1417	.083	.0330	.0366	1.0666700	9.9659
206	1.1050	2.7898	.7202	.1438	.084	.0009	.0366	1.0666700	10.1211
207	1.1050	2.9550	.6958	.1512	.180	-.0221	.0637	1.1115249	10.5529
208	1.1050	2.8406	.7228	.1448	.093	-.0203	.0367	1.0666700	10.1438
209	1.1050	2.9266	.7064	.1501	.195	.0074	.0670	1.1200289	10.4542
210	1.1050	2.8280	.7444	.1451	.015	.0004	.0004	1.0666700	10.0991
211	1.1050	2.7965	.7379	.1427	.089	.0095	.0356	1.0666700	9.9885
212	1.1050	2.9263	.6923	.1508	.181	-.0221	.0643	1.1127254	10.5610
213	1.1050	2.7710	.7267	.1426	.086	-.0139	.0347	1.0666700	10.0540
214	1.1050	2.8997	.7030	.1497	.200	.0080	.0690	1.1211668	10.4619
215	1.1050	2.7276	.7421	.1404	.086	.0179	.0347	1.0666700	9.8987
216	1.1050	2.8943	.7183	.1483	.196	.0043	.0679	1.1278677	10.3418
217	1.1050	2.8660	.7295	.1471	.212	.0357	.0717	1.1363716	10.2431
218	1.1050	2.6592	.7139	.1477	.197	.0042	.0684	1.1293787	10.3520
219	1.1050	2.8327	.7252	.1466	.218	.0364	.0731	1.1378201	10.2529
220	1.1050	2.9869	.7029	.1565	-.012	.0494	-.0005	1.1017084	10.7624
222	.9050	3.1898	.7125	.1558	-.004	.0093	-.0080	1.1085229	10.9224
225	.9050	3.2172	.7331	.1550	-.021	-.0262	-.0262	1.1121011	10.8241
226	.9050	3.2454	.7406	.1571	-.033	-.0118	-.0293	1.1072300	10.9177
228	.9050	3.1790	.7023	.1513	.207	-.0147	.0696	1.1174524	10.6972
229	.9050	3.2312	.6852	.1536	.207	-.0270	.0695	1.1056484	10.8705
230	.9050	3.1987	.7256	.1541	.020	.0187	.0049	1.1164073	10.7624
232	.9050	3.1493	.7126	.1502	.220	.0145	.0730	1.1251358	10.5985
234	.9050	3.2431	.7488	.1569	-.024	-.0271	-.0294	1.1082891	10.9099
235	.9050	3.2352	.7271	.1559	-.019	-.0256	-.0256	1.1082654	10.8837
236	.9050	3.2197	.7254	.1550	.003	-.0093	-.0100	1.1117593	10.8323
237	.9050	3.2129	.6913	.1530	.217	-.0098	.0717	1.1103700	10.8098
239	.9050	3.0247	.7361	.1436	.096	.0069	.0381	1.0688736	10.1847
240	.9050	3.0229	.7361	.1435	.093	.0059	.0370	1.0666700	10.1789
241	.9050	3.1161	.7353	.1492	-.008	-.0162	-.0162	1.0666700	10.4884
242	.9050	3.0714	.7494	.1469	-.020	-.0219	-.0229	1.0666700	10.3400
244	.9050	3.1912	.7470	.1538	-.051	-.0437	-.0493	1.0666700	10.7376
245	.9050	3.1912	.7329	.1534	-.040	-.0411	-.0411	1.0794379	10.7376
246	.9050	3.1629	.7355	.1518	-.043	-.0432	-.0432	1.0666700	10.6437
248	.9050	3.0714	.7217	.1457	.192	-.0220	.0397	1.0688736	10.3400
249	1.0593	2.9466	.7458	.1490	.079	.0306	.0306	1.1339108	10.3190
251	1.0461	3.1049	.7373	.1582	-.027	.0049	-.0204	1.1006278	10.8323
252	1.0603	3.0078	.7338	.1525	.023	.0034	.0034	1.1186339	10.5329
253	1.0606	2.9069	.7500	.1467	.073	.0235	.0285	1.1145589	10.1847
254	1.0638	2.8702	.7500	.1444	.024	.0054	.0054	1.0666700	10.0653
255	1.1050	2.8263	.7382	.1449	.163	.0333	.0596	1.1148971	10.1002
256	1.0561	3.0701	.7458	.1565	-.036	-.0259	-.0342	1.1055880	10.7376
258	1.0638	2.9463	.7500	.1491	-.031	-.0325	-.0325	1.0666700	10.3285
259	1.0036	3.1090	.7328	.1552	-.026	-.0296	-.0296	1.1089518	10.7376
260	1.0608	3.0373	.7356	.1543	-.021	-.0251	-.0251	1.1110718	10.6357
261	1.0598	2.9760	.7475	.1508	.018	.0003	.0003	1.1263562	10.4218
262	1.0538	2.9151	.7500	.1472	-.020	-.0236	-.0236	1.0666700	10.2206
263	1.0606	2.9518	.7500	.1494	.015	-.0011	-.0011	1.1145589	10.3400
264	1.1050	2.8704	.7234	.1469	.167	.0026	.0606	1.1148971	10.2555
266	1.1050	3.0211	.7329	.1585	-.036	.0122	-.0223	1.0979199	10.8323
269	1.1050	2.9294	.7330	.1515	.029	.0076	.0076	1.1215704	10.4645
270	1.1050	2.9592	.7349	.1533	-.018	-.0218	-.0218	1.1138122	10.5681
273	1.1050	2.7561	.6961	.1465	.218	.0288	.0754	1.1245025	10.3967
275	1.1050	2.7077	.6989	.1431	.113	-.0070	.0454	1.0666700	10.2166
276	1.1050	2.5865	.7380	.1365	.089	.0136	.0359	1.0666700	9.8048
277	1.1050	2.7481	.7026	.1453	.210	-.0070	.0714	1.1279321	10.3425
279	1.1050	2.7019	.7032	.1422	.104	-.0340	.0406	1.0666700	10.1772
280	1.1050	2.7387	.7040	.1443	.199	-.0077	.0689	1.1236078	10.3137
281	1.1050	2.6371	.7234	.1388	.090	-.0168	.0361	1.0666700	9.9600
282	1.1050	2.7463	.7422	.1417	.125	.0316	.0487	1.0946901	9.9659
283	1.1050	2.7898	.7269	.1438	.126	-.0005	.0487	1.0946901	10.1211
285	1.1050	2.6481	.7259	.1390	.087	-.0158	.0350	1.0666700	9.9509
286	1.1050	2.7276	.7500	.1407	.047	.0179	.0179	1.0666700	9.8987
288	1.0042	2.8100	.7422	.1403	.087	.0182	.0350	1.0666700	9.9659
289	1.1050	2.8974	.7469	.1498	.024	.0045	.0045	1.1294969	10.3526
292	1.1050	2.9737	.7258	.1569	-.016	.0444	-.0041	1.1042673	10.7624
293	.9050	3.1363	.7213	.1531	.025	.0202	.0076	1.1193063	10.7624
294	.9050	3.1667	.7497	.1559	-.021	-.0273	-.0278	1.1122181	10.9099
297	.9050	3.1835	.7390	.1532	-.005	-.0144	-.0144	1.1194645	10.7120
298	.9050	3.2131	.7500	.1555	-.023	-.0289	-.0289	1.1131243	10.8268
299	.9050	3.1522	.7373	.1515	.045	.0147	.0147	1.1264740	10.6083
300	.9050	3.1987	.7429	.1545	.016	.0152	.0019	1.1176063	10.7624
303	.9050	3.2371	.7500	.1566	-.023	-.0293	-.0293	1.1095142	10.8901
304	.9050	3.2172	.7263	.1549	.004	-.0095	-.0095	1.1123030	10.8240
306	.9050	3.0247	.7500	.1442	.027	.0069	.0069	1.0688736	10.1847
307	.9050	3.0229	.7500	.1441	.025	.0059	.0059	1.0666700	10.1789
312	.9050	3.1629	.7500	.1521	-.045	-.0458	-.0458	1.0666700	10.6437
313	1.0593	2.9470	.7500	.1491	.077	.0297	.0297	1.1341157	10.3204
314	1.0602	3.0095	.7500	.1530	.018	.0003	.0003	1.1194412	10.5305
316	1.1050	2.8263	.7500	.1453	.094	.0333	.0333	1.1148971	10.1002
317	1.0607	3.0387	.7500	.1548	-.024	-.0277	-.0277	1.1117993	10.6408
318	1.0069	3.1065	.7500	.1556	-.029	-.0324	-.0324	1.1099258	10.7376
320	1.1050	2.8704	.7500	.1480	.020	.0026	.0026	1.1148971	10.2555
321	1.1050	2.9606	.7500	.1538	-.021	-.0245	-.0245	1.1145849	10.5733
322	1.1050	2.9310	.7500	.1520	.024	.0043	.0043	1.1224255	10.4702
323	1.1050	2.8681	.7500	.1481	.089	.0348	.0348	1.1374929	10.2506
326	1.1050	2.7111	.7129	.1439	.234	.0237	.0766	1.1358863	10.2401
329	1.1050	2.6785	.7103	.1412	.109	-.0098	.0425	1.0666700	10.0994
330	1.1050	2.7077	.7031	.1431	.142	-.0077	.0531	1.0842803	10.2166
333	1.1050	2.5865	.7390	.1365	.094	.0134	.0376	1.0704742	9.8049
334	1.1050	2.6505	.7260	.1391	.092	-.0140	.0369	1.0704575	9.9600
338	1.0042	2.8100	.7500	.1406	.048	.0182	.0182	1.0666700	9.9659
339	1.1050	2.6061	.7500	.1371	.046	.0171	.0171	1.0666700	9.7956
340	1.1050	2.8976	.7500	.1498	.023	.0039	.0039	1.1296522	10.3537
341	.9050	3.0919	.7315	.1507	.049	.0166	.0166	1.1285353	10.6236
343	.9050	3.1217	.7438	.1534	.021	.0156	.0042	1.1216221	10.7624
347	.9050	3.1846	.7500	.1535	-.007	-.0164	-.0164	1.1179916	10.7159
349	.9050	3.1536	.7500	.1518	.041	.0121	.0121	1.1270740	10.6127
352	1.0908	2.6163	.7500	.1371	.046	.0172	.0172	1.0666700	9.8047

APPENDIX 2

PT#	DIV/P	* GDPS	* KE	P0	P1	P2	P3	EPS1	EPS2	EPS3	OPS1	OPS2	OPS3	#SM 1	#SM 2	#SM 3	S I 1	S I 2	S I 3	RR01	RR02	RR03
2	.09	.055	.1457	14.67	14.67	17.23	16.72	2.15	2.09	2.21	1.34	1.41	1.49	104.0	107.6	107.6	56.1	58.6	0.0	.110	.110	.110
5	.09	.054	.1434	15.01	15.01	17.26	17.05	2.16	2.13	2.26	1.34	1.41	1.49	103.8	103.8	103.8	54.1	0.0	0.0	.110	.110	.110
6	.09	.054	.1433	14.90	14.90	17.24	17.03	2.16	2.13	2.24	1.34	1.41	1.49	104.0	104.0	104.0	56.1	0.0	0.0	.110	.110	.109
7	.09	.060	.1490	15.00	15.00	17.25	17.03	2.16	2.13	2.25	1.34	1.41	1.50	103.9	103.9	103.9	56.1	0.0	0.0	.110	.110	.110
9	.09	.056	.1496	14.20	14.20	17.21	16.70	2.15	2.09	2.13	1.34	1.41	1.49	104.2	107.7	114.7	56.1	58.6	109.6	.110	.110	.110
10	.11	-.041	.0679	14.59	14.59	16.89	16.39	2.11	2.05	2.17	1.58	1.39	1.46	106.1	109.8	109.8	85.1	58.6	0.0	.110	.110	.110
13	.09	.052	.1457	14.30	14.30	17.22	16.70	2.15	2.09	2.14	1.34	1.41	1.48	104.1	107.7	107.7	56.1	58.6	0.0	.110	.110	.109
14	.09	.062	.1535	14.68	14.68	17.23	16.72	2.15	2.09	2.21	1.34	1.41	1.51	104.0	107.6	107.6	56.1	58.6	0.0	.110	.110	.110
16	.11	-.041	.0551	14.92	14.92	16.92	16.71	2.12	2.09	2.21	1.59	1.38	1.46	105.9	105.9	105.9	83.2	0.0	0.0	.110	.110	.110
17	.11	-.042	.0655	14.81	14.81	16.31	16.70	2.11	2.09	2.19	1.58	1.38	1.46	106.0	106.0	106.0	85.1	0.0	0.0	.110	.110	.109
18	.11	-.036	.0705	14.91	14.91	16.91	16.70	2.11	2.09	2.21	1.59	1.38	1.47	106.0	106.0	106.0	85.1	0.0	0.0	.110	.110	.110
19	.09	.059	.1471	15.11	15.11	17.65	17.44	2.21	2.18	2.27	1.34	1.41	1.50	100.0	100.0	103.3	0.0	0.0	50.4	.110	.110	.110
22	.09	.052	.1435	14.58	14.58	17.23	17.02	2.15	2.13	2.18	1.34	1.41	1.48	104.1	104.1	104.4	56.1	0.0	5.4	.110	.110	.108
23	.09	.054	.1434	14.83	14.83	16.69	16.35	2.09	2.12	2.23	1.33	1.40	1.48	104.4	104.4	104.4	62.3	0.0	0.0	.108	.110	.105
26	.09	.060	.1490	14.93	14.93	16.69	16.96	2.09	2.12	2.25	1.33	1.40	1.50	104.4	104.4	104.4	62.3	0.0	0.0	.108	.110	.110
27	.09	.069	.1633	14.19	14.19	17.21	16.70	2.15	2.09	2.13	1.34	1.41	1.53	104.2	107.7	115.0	56.1	58.6	114.5	.110	.110	.110
28	.09	.055	.1491	14.14	14.14	16.65	16.61	2.08	2.08	2.12	1.33	1.41	1.48	104.6	108.3	115.3	62.3	58.6	109.6	.108	.110	.110
29	.11	-.046	.0722	14.13	14.13	16.86	16.36	2.11	2.04	2.09	1.58	1.38	1.46	106.3	110.0	117.0	85.1	58.6	109.6	.110	.110	.110
32	.10	.053	.1500	13.81	13.81	17.19	16.68	2.15	2.09	2.06	1.33	1.41	1.48	104.3	107.9	115.2	56.1	58.6	116.9	.110	.110	.108
33	.09	.065	.1557	14.62	14.62	16.68	16.63	2.08	2.08	2.20	1.33	1.41	1.51	104.5	108.2	108.2	62.3	58.6	0.0	.108	.110	.110
35	.09	.051	.1430	14.48	14.48	16.12	15.79	2.02	2.00	2.18	1.32	1.39	1.46	105.0	109.2	109.2	68.6	65.2	0.0	.105	.108	.110
36	.09	.052	.1452	14.23	14.23	16.66	16.61	2.08	2.08	2.13	1.33	1.41	1.47	104.6	108.3	108.3	62.3	58.6	0.0	.108	.110	.108
37	.11	-.045	.0637	14.56	14.56	16.89	16.24	2.11	2.03	2.15	1.59	1.52	1.44	106.2	110.8	110.8	85.1	75.0	0.0	.110	.110	.108
38	.11	-.032	.0765	14.60	14.60	16.89	16.39	2.11	2.05	2.17	1.58	1.39	1.48	106.1	109.8	109.8	85.1	58.6	0.0	.110	.110	.110
39	.11	-.042	.0666	14.53	14.53	16.89	15.84	2.11	1.98	2.16	1.58	1.38	1.45	106.2	110.2	110.2	85.1	65.2	0.0	.110	.109	.110
41	.11	-.043	.0685	14.22	14.22	16.87	16.36	2.11	2.05	2.09	1.58	1.38	1.45	106.3	109.9	109.9	85.1	58.6	0.0	.110	.110	.108
46	.10	.048	.1442	13.86	13.86	17.19	16.13	2.15	2.02	2.06	1.33	1.41	1.47	104.3	108.3	108.3	56.1	65.2	0.0	.110	.108	.105
47	.09	.062	.1558	14.30	14.30	17.22	16.71	2.15	2.09	2.14	1.34	1.41	1.51	104.1	107.7	107.7	56.1	58.6	0.0	.110	.110	.108
48	.11	-.046	.0602	14.37	14.37	16.91	16.52	2.11	2.06	2.19	1.59	1.55	1.44	106.0	107.1	107.1	85.1	17.6	0.0	.110	.110	.110
49	.11	-.043	.0661	14.49	14.49	16.38	16.65	2.11	2.08	2.13	1.58	1.38	1.45	106.2	106.5	106.5	85.1	5.6	0.0	.110	.110	.108
51	.09	.059	.1476	15.05	15.05	17.12	17.41	2.14	2.18	2.27	1.33	1.41	1.49	100.0	100.0	103.4	0.0	0.0	56.2	.108	.110	.110
52	.09	.064	.1524	15.11	15.11	17.65	17.44	2.21	2.18	2.27	1.34	1.41	1.51	100.0	100.0	103.1	0.0	0.0	52.1	.110	.110	.110
57	.09	.054	.1429	14.30	14.93	16.53	16.78	2.07	2.10	2.24	1.33	1.40	1.48	104.5	104.5	104.5	64.1	0.0	0.0	.107	.109	.110
58	.09	.052	.1416	14.94	14.94	17.25	16.49	2.16	2.06	2.25	1.34	1.40	1.48	104.0	104.0	104.2	56.1	0.0	4.6	.110	.108	.110
61	.09	.052	.1435	14.50	14.50	16.67	16.91	2.08	2.11	2.17	1.33	1.40	1.47	104.5	104.9	104.9	62.3	5.6	0.0	.108	.110	.108
62	.09	.060	.1523	14.56	14.56	17.23	16.97	2.15	2.12	2.17	1.34	1.41	1.50	104.1	104.6	104.6	56.1	8.5	0.0	.110	.110	.108
63	.09	.047	.1421	14.10	14.10	17.21	16.45	2.15	2.06	2.09	1.34	1.40	1.46	104.2	104.2	105.4	56.1	0.0	19.1	.110	.108	.105
64	.09	.052	.1436	14.51	14.51	16.67	16.94	2.08	2.12	2.17	1.33	1.40	1.47	104.5	104.5	104.9	62.3	0.0	5.4	.108	.110	.108
65	.09	.061	.1525	14.57	14.57	17.23	17.62	2.15	2.13	2.17	1.34	1.41	1.50	104.1	104.1	104.6	56.1	0.0	8.3	.110	.110	.108
68	.09	.063	.1522	14.93	14.93	16.69	16.95	2.09	2.12	2.24	1.33	1.40	1.51	104.4	104.5	104.5	62.3	1.1	0.0	.107	.110	.110
69	.09	.061	.1504	14.94	14.94	17.25	16.49	2.16	2.06	2.24	1.34	1.40	1.51	104.0	104.0	104.4	56.1	0.0	7.4	.110	.108	.110
73	.09	.068	.1629	14.13	14.13	17.21	16.14	2.15	2.02	2.12	1.34	1.41	1.52	104.2	108.2	115.7	56.1	65.2	115.4	.110	.108	.110
75	.11	-.026	.0860	14.12	14.12	16.86	16.36	2.11	2.04	2.08	1.58	1.38	1.50	106.3	110.0	117.4	85.1	58.6	115.1	.110	.110	.110
76	.09	.071	.1653	14.13	14.13	16.65	16.61	2.08	2.08	2.12	1.33	1.41	1.53	104.6	108.3	115.7	62.3	58.6	115.4	.107	.110	.110
77	.10	.070	.1662	13.80	13.80	17.19	16.68	2.15	2.09	2.05	1.33	1.41	1.53	104.3	107.9	115.6	56.1	58.6	122.7	.110	.110	.108
78	.09	.051	.1458	14.02	14.02	16.10	15.86	2.01	2.00	2.10	1.32	1.39	1.46	105.2	109.4	116.6	68.6	65.2	109.6	.105	.107	.110
79	.11	-.026	.0825	14.38	14.38	16.37	16.32	2.05	2.04	2.09	1.53	1.38	1.45	106.5	110.2	117.3	86.6	58.6	109.6	.107	.110	.110
80	.10	.053	.1495	13.75	13.75	16.63	16.59	2.08	2.07	2.05	1.33	1.40	1.47	104.8	108.5	115.9	62.3	58.6	116.9	.107	.110	.108
83	.11	-.044	.0679	14.10	14.10	16.86	16.20	2.11	2.03	2.07	1.58	1.52	1.44	106.3	111.0	118.2	85.1	75.0	109.6	.110	.110	.110
84	.11	-.042	.0731	13.76	13.76	15.83	16.33	2.10	2.04	2.02	1.58	1.38	1.45	106.5	110.2	117.7	85.1	58.6	116.9	.110	.110	.109
87	.10	.048	.1479	13.39	13.38	17.17	16.11	2.15	2.01	1.98	1.33	1.40	1.46	104.4	108.4	116.5	56.1	65.2	124.1	.110	.107	.105
88	.09	.067	.1585	14.49	14.49	16.12	15.99	2.02	2.00	2.18	1.33	1.39	1.51	105.0	109.2	109.2	68.6	65.2	0.0	.105	.107	.110
92	.11	-.030	.0788	14.17	14.17	16.37	16.33	2.05	2.04	2.09	1.54	1.38	1.45	106.4	110.2	110.2	86.6	58.6	0.0	.107	.110	.108
93	.10	.040	.1374	13.35	13.35	14.80	14.46	1.85	1.81	1.96	1.31	1.36	1.41	106.5	112.3	112.3	83.0	80.5	0.0	.099	.102	.104
94	.10	.039	.1395	12.94	12.94	15.14	14.36	1.89	1.86	1.88	1.31	1.36	1.41	106.4	111.7	111.7	78.8	76.0	0.0	.101	.103	.101
95	.11	-.036	.0730	14.56	14.56	16.89	16.24	2.11	2.03	2.15	1.58	1.52	1.47	106.1	110.8	110.8	85.1	75.0	0.0	.110	.110	.110
96	.11	-.047	.0643	14.19	14.19	16.86	16.21	2.11	2.03	2.07	1.58	1.52	1.44	106.3	111.0	111.0	85.1	75.0	0.0	.110	.110	.108
99	.11	-.032	.0791	14.23	14.23	16.87	16.37	2.11	2.05	2.09	1.58	1.38	1.48	106.3	109.9	109.9	85.1	58.6	0.0	.110	.110	.108
100	.11	-.032	.0773	14.54	14.54	16.89	15.84	2.11	1.98	2.16	1.58	1.38	1.48	106.2	110.2	110.2	85.1	65.2	0.0	.110	.107	.110
104	.11	-.047	.0678	13.80	13.80	16.83	15.79	2.10	1.97	2.01	1.58	1.38	1.43	106.5	110.6	110.6	85.1	65.2	0.0	.110	.107	.105
107	.10	.041	.1390	13.47	13.47	15.90	14.65	1.99	1.83	1.99	1.32	1.37	1.43	105.5	110.8	110.8	70.5	80.5	0.0	.104	.102	.104
108	.10	.063	.1591	13.87	13.87	17.20	16.13	2.15	2.02	2.05	1.33	1.41	1.51	104.3	108.2	108.2	56.1	65.2	0.0	.110	.107	.105
109	.10	.040	.1411	13.06	13.06	16.24	15.05	2.03	1.88	1.90	1.32	1.38	1.43	105.3	110.3	110.3	66.3	76.0	0.0	.106	.103	.101
110	.11	-.039	.0682	14.86	14.86	16.91	16.51	2.11	2.06	2.18	1.59	1.55	1.47	106.0	107.3	107.3	85.1	20.4	0.0	.110	.110	.110
111	.11	-.040	.0611	14.45	14.45	16.88	16.46	2.11	2.06	2.11	1.58	1.54	1.43	106.2	107.7	107.7	85.1	24.7	0.0	.110	.110	.107
112	.11	-.034	.0756	14.48	14.48	16.88	16.63	2.11	2.08	2.13	1.58	1.38	1.48	106.2	106.8	106.8	85.1	9.1	0.0	.110	.110	.107
113	.11	-.047	.0657	14.01	14.01	15.85	16.02	2.11	2.00	2.04	1.58	1.37	1.43	106.4	107.6	107.6	85.1	19.7	0.0	.110	.107	.105
115	.09	.067	.1557	15.05	15.05	17.12	17.41	2.14	2.18	2.26	1.33	1.41	1.52	100.0	100.0	103.6	0.0	0.0	58.8	.107	.110	.110
116	.09	.057	.1458	14.93	14.93	16.59	16.62	2.07	2.10	2.25	1.32	1.40	1.48	100.0	100.0	104.3	0.0	0.0	68.4	.105	.107	.110
124	.09	.052	.1416	14.80	14.80	16.14	16.35	2.02	2.04	2.23	1.33	1.39	1.47	104.9	104.9	105.2	68.6	0.0	4.6	.105	.107	.110
127	.10	.038	.1395	13.04	13.04	16.08	15.00	2.01	1.87	1.90	1.32	1.37	1.42	105.5	108.6	108.6	68.2	47.1	0.0	.105	.103	.100
128	.09	.061	.1562	14.07	14.07	17.21	16.33	2.15	2.04	2.08	1.34	1.40	1.50	104.2	105.7	105.7	56.1	24.5	0.0	.110	.107	.105
129	.10	.038	.1385	12.92	12.92	14.98	14.82	1.87	1.85	1.87	1.31	1.34	1.41	106.6	109.9	109.9	80.7	47.1	0.0	.100	.103	.100
130	.09	.053	.1550	14.43	14.43	16.67	16.89	2.08	2.11	2.16	1.33	1.40	1.50	104.5	105.1	105.1	62.3	9.5	0.0	.107	.110	.107
131	.09	.062	.1565	14.09	14.09	17.21	16.45	2.15	2.06	2.08	1.34	1.40	1.51	104.2	104.2	105.7	56.1	0.0	23.6	.110	.107	.105
132	.10	.038	.1390	13.08	13.08	16.08	15.22	2.01	1.90	1.90	1.32	1.37	1.42	105.5	105.5	108.6	68.2	0.0	45.4	.105	.103	.100
133	.09	.064	.1553	14.50	14.50	16.67	16.94	2.08	2.12	2.16	1.33	1.40	1.51	104.5	104.5	105.1	62.3	0.0	9.2	.107	.110	.107
134	.10	.038	.1389	12.96	12.96	14.98	15.07	1.87	1.88	1.89	1.31	1.36	1.41	106.6	106.6	109.7	80.7	0.0	45.4	.100	.103	.100
137	.09	.066	.1557	14.73	14.78	16.14	16.29	2.02	2.04	2.22	1.33	1.39	1.51	104.9	105.5	105.5	68.6	9.5	0.0	.105	.107	.110
140	.09	.066	.1561	14.79	14.79	16.14	16.34	2.02	2.04	2.22	1.33	1.39	1.51	104.9	104.9	105.5	68.6	0.0	9.3	.105	.107	.110
141	.11	-.024	.0876	14.16	14.16	16.86	16.65	2.11	2.08	2.09	1.58	1.38	1.51	106.3	106.3	117.2	85.1	0.0	172.0	.110	.110	.110
142	.10	-.018	.0858	14.85	14.85	16.42	16.68	2.05	2.09	2.21	1.54	1.38	1.48	106.1	106.1	106.2	86.6	0.0	1.5	.107	.110	.110
144	.11	-.027	.0858	14.07	14.07	16.85	15.31	2.11	1.98	2.07	1.58	1.38	1.50	106.4	110.4	118.2	85.1	65.2	115.9	.110	.107	.110
146	.10	.069	.1662	13.70	13.70	17.19	16.12	2.15	2.02	2.03	1.33	1.41	1.52	104.3	108.3	116.4	56.1	65.2	124.6	.110	.107	.107
149	.09	.072	.1667	14.01	14.01	16.10	15.96	2.01	1.99	2.09	1.32	1.39	1.52	105.2	109.4	117.1	68.6	65.2	117.2	.105	.107	.110
150	.11	-.030	.0824	14.09	14.09	16.86	16.20	2.11	2.03	2.06	1.58	1.52	1.49	106.4	111.0	118.5	85.1	75.0	115.4	.110	.110	.110
151	.11	-.026	.0893	13.75	13.75	16.83	16.33	2.10	2.04	2.01	1.58	1.38	1.50	106.5	110.2	118.1	85.1	58.6	123.3	.110	.110	.107
152	.11	-.010	.0986	14.07	14.37	16.37	16.32	2.05	2.04	2.38	1.53	1.38	1.50	106.5	110.2	117.7	86.6	58.6	115.9	.107	.110	.110
153	.10	.072	.1682	13.74	13.74	16.63	16.59	2.08	2.07	2.04	1.33	1.40	1.52	104.8	108.5	116.3	62.3	58.6	123.6	.107	.110	.107
155	.11	-.016	.0909	13.78	13.78	15.87	15.74	1.98	1.97	2.07	1.49	1.37	1.44	106.6	111.0	118.3	88.2	65.2	109.6	.105	.107	.110
156	.11	-.028	.0834	13.71	13.71	16.34	16.29	2.04	2.04	2.01	1.53	1.38	1.43	106.7	110.4	118.0	86.6	58.6	116.9	.107	.110	.107
157	.10	.045	.1455	13.08	13.08	15.84	15.66	1.98	1.96	1.92	1.32	1.38	1.44	105.7	110.2	118.7	70.9	67.7	126.3	.104	.107	.104
159	.11	-.045	.0670	14.05	14.05	16.85	15.71	2.11	1.96	2.06	1.58	1.47	1.44	106.4	111.2	118.5	85.1	76.7	109.6	.110	.107	.110
161	.12	-.046	.0719	13.33	13.33	16.40	15.76	2.10	1.97	1.93	1.57	1.37	1.43	106.7	110.8	119.1	85.1	65.2	124.1	.110	.107	.105
163	.11	-.040	.0689	13.73	13.73	16.83	16.18	2.10	2.02	2.00	1.58	1.52	1.44	106.5	111.2	118.8	85.1	75.0	116.9	.110	.110	.107
164	.10	.039	.1399	13.01	13.01	15.87	14.62	1.98	1.83	1.90	1.32	1.37	1.42	105.7	111.0	120.1	70.5	80.5	126.4	.104	.102	.104
165	.10	.054	.1536	13.38	13.38	17.17	16.11	2.15	2.01	1.97	1.33	1.40	1.48	104.4	108.4	116.7	56.1	65.2	126.2	.110	.107	.105
166	.10	.046	.1469	13.20	13.20	16.95	15.86	2.12	1.98	1.94	1.33	1.40	1.45	104.7	108.3	117.3	58.4	67.7	126.9	.109	.107	.104
168	.10	.071	.1671	13.62	13.62	15.10	14.60	1.89	1.85	2.00	1.31	1.36	1.50	106.2	111.5	111.5	79.8	77.1	0.0	.100	.103	.105
170	.11	-.016	.0913	14.13	14.13	16.37	16.33	2.05	2.06	2.39	1.54	1.38	1.49	106.4	110.2	110.2	86.6	58.6	0.0	.107	.110	.107
171	.10	.068	.1644	13.63	13.63	15.94	15.78	1.99	1.97	2.01	1.32	1.39	1.50	105.4	109.8	109.8	70.1	66.8	0.0	.104	.107	.104
172	.10	.008	.1117	13.33	13.33	14.71	14.37	1.84	1.80	1.95	1.38	1.35	1.40	107.2	113.0	113.0	91.8	80.5	0.0	.099	.102	.104
173	.11	-.003	.1055	12.92	12.92	15.00	14.72	1.88	1.84	1.86	1.41	1.35	1.40	107.4	112.7	112.7	90.7	76.0	0.0	.101	.103	.101
174	.10	.037	.1379	12.87	12.87	14.77	14.43	1.85	1.80	1.87	1.30	1.35	1.40	106.8	112.5	112.5	93.0	80.5	0.0	.099	.102	.101
175	.10	.060	.1580	13.37	13.37	14.80	14.46	1.85	1.81	1.95	1.31	1.36	1.47	106.5	112.3	112.3	83.0	80.5	0.0	.099	.102	.104
176	.11	-.036	.0756	14.20	14.20	16.86	16.21	2.11	2.03	2.07	1.58	1.52	1.47	106.3	111.0	111.0	85.1	75.0	0.0	.110	.110	.107
179	.11	-.050	.0649	13.78	13.78	16.83	15.69	2.10	1.96	2.00	1.58	1.47	1.43	106.5	111.3	111.3	85.1	76.7	0.0	.110	.107	.105
181	.11	-.032	.0827	13.81	13.81	16.84	15.80	2.10	1.97	2.01	1.56	1.38	1.48	106.5	110.6	110.6	85.1	65.2	0.0	.110	.107	.105
185	.12	-.032	.0835	13.02	13.02	15.78	14.81	2.00	1.85	1.87	1.50	1.36	1.40	107.1	112.1	112.1	87.6	76.0	0.0	.106	.103	.101
186	.10	.068	.1647	13.63	13.63	16.06	14.83	2.01	1.85	2.01	1.32	1.38	1.51	105.3	110.5	110.5	68.8	78.6	0.0	.105	.102	.105

PT#	DIV/P	GDPS	KE	P0	P1	P2	P3	EPS1	EPS2	EPS3	OPS1	OPS2	OPS3	#SH 1	#SH 2	#SH 3	S I 1	S I 2	S I 3	RRB1	RRB2	RRB3
187	.10	.038	.1395	12.98	12.98	15.96	14.62	1.98	1.33	1.89	1.32	1.37	1.42	105.7	111.1	111.1	70.5	80.5	0.0	.104	.102	.101
188	.10	.062	.1597	13.49	13.49	15.90	14.65	1.99	1.83	1.98	1.32	1.37	1.49	105.5	110.8	110.8	70.5	80.5	0.0	.104	.102	.104
189	.10	.064	.1616	13.64	13.64	16.92	15.82	2.12	1.38	2.01	1.33	1.40	1.51	104.6	108.8	108.8	59.0	68.0	0.0	.109	.106	.104
191	.11	-.038	.3715	14.44	14.44	16.88	15.44	2.11	2.06	2.10	1.58	1.54	1.46	106.2	108.0	108.0	95.1	28.4	0.0	.110	.110	.107
192	.10	-.023	.0913	14.80	14.80	16.42	14.48	2.05	2.06	2.18	1.54	1.54	1.47	106.2	107.5	107.5	86.6	21.2	0.0	.107	.110	.110
193	.11	-.051	.0421	13.39	13.39	16.95	15.49	2.11	1.39	2.03	1.58	1.49	1.42	106.4	108.5	108.5	85.1	33.5	0.0	.110	.107	.105
194	.11	-.018	.0488	14.43	14.43	16.39	14.60	2.05	2.07	2.12	1.54	1.38	1.48	106.3	107.0	107.0	86.6	10.0	0.0	.107	.110	.107
195	.11	-.033	.0799	14.00	14.00	16.85	15.99	2.11	2.00	2.04	1.58	1.37	1.48	106.4	108.0	108.0	85.1	25.0	0.0	.110	.107	.105
196	.11	-.029	.0854	13.01	13.71	15.83	14.77	1.98	1.85	1.87	1.48	1.35	1.40	107.1	110.3	110.3	88.1	47.1	0.0	.105	.103	.100
197	.10	-.001	.1205	14.73	14.73	15.32	16.07	1.99	2.01	2.19	1.47	1.37	1.49	106.3	107.0	107.0	88.2	9.9	0.0	.105	.107	.110
198	.09	.071	.1594	14.92	14.92	16.59	16.82	2.07	2.13	2.24	1.32	1.40	1.52	100.0	100.0	104.6	0.0	0.0	72.8	.105	.107	.110
199	.09	.050	.1431	14.16	14.16	15.81	15.35	1.38	1.39	2.10	1.32	1.39	1.45	100.0	100.0	106.4	0.0	0.0	96.9	.101	.104	.106
202	.10	.044	.1404	13.75	13.75	16.37	15.44	2.05	1.93	2.03	1.32	1.38	1.44	100.0	100.0	107.1	0.0	0.0	103.8	.104	.101	.104
203	.10	.039	.1372	13.45	13.45	15.67	14.57	1.96	1.82	1.98	1.32	1.37	1.42	105.7	104.6	108.6	73.1	43.1	0.0	.103	.101	.103
204	.10	.038	.1363	13.33	13.33	14.58	14.40	1.82	1.80	1.95	1.30	1.35	1.41	106.8	109.9	109.9	85.6	43.1	0.0	.098	.101	.103
205	.10	.037	.1356	13.12	13.12	15.30	14.33	1.79	1.79	1.91	1.30	1.34	1.40	107.1	107.1	110.6	58.5	0.0	48.0	.097	.100	.102
206	.10	.037	.1357	13.24	13.24	15.40	14.67	1.93	1.81	1.93	1.31	1.36	1.41	106.0	106.0	109.5	76.0	0.0	48.0	.102	.100	.102
207	.10	.064	.1610	13.66	13.66	16.77	15.80	2.10	1.98	2.00	1.33	1.39	1.50	104.7	107.0	127.0	60.7	36.9	0.0	.108	.106	.103
208	.10	.037	.1380	12.96	12.96	15.69	14.56	1.86	1.82	1.88	1.31	1.36	1.41	105.9	109.4	109.4	72.5	51.7	0.0	.103	.101	.100
209	.10	.068	.1643	13.65	13.66	15.80	15.08	1.97	1.97	2.00	1.32	1.38	1.50	105.5	107.9	107.9	71.4	35.0	0.0	.104	.106	.104
210	.11	.000	.1083	12.91	12.91	14.86	14.70	1.86	1.84	1.86	1.39	1.35	1.39	107.4	110.8	110.8	91.2	47.1	0.0	.100	.103	.100
211	.10	.036	.1369	12.35	12.45	14.66	14.38	1.82	1.83	1.66	1.30	1.35	1.39	107.0	110.7	110.7	35.0	51.7	0.0	.098	.101	.100
212	.10	.064	.1612	13.71	13.71	16.79	16.30	2.10	2.00	2.01	1.33	1.39	1.51	104.6	104.6	107.0	60.5	0.0	35.4	.108	.106	.103
213	.10	.035	.1360	12.54	12.94	15.38	14.46	1.92	1.81	1.87	1.31	1.36	1.40	106.2	106.2	110.1	76.0	0.0	53.4	.102	.100	.100
214	.10	.069	.1652	13.70	13.70	15.82	15.39	1.98	2.00	2.01	1.32	1.38	1.51	105.5	105.5	107.7	71.4	0.0	33.5	.104	.106	.104
215	.10	.035	.1359	12.82	12.82	14.30	14.31	1.79	1.79	1.85	1.30	1.34	1.39	107.3	107.3	111.2	88.5	0.0	53.4	.097	.100	.100
216	.10	.068	.1645	13.65	13.65	15.91	14.81	1.99	1.85	2.01	1.32	1.37	1.50	105.4	108.5	108.5	70.5	46.5	0.0	.104	.102	.104
217	.10	.072	.1676	13.64	13.64	14.95	15.80	1.87	1.85	2.00	1.31	1.36	1.50	106.3	109.4	109.4	81.6	44.5	0.0	.100	.102	.105
218	.10	.068	.1647	13.70	13.70	15.94	15.06	1.99	1.88	2.01	1.32	1.37	1.51	105.4	105.4	109.5	70.2	0.0	44.5	.104	.102	.104
219	.10	.073	.1687	13.69	13.69	14.97	15.05	1.37	1.88	2.01	1.31	1.36	1.51	106.3	106.3	109.2	91.3	0.0	42.7	.100	.102	.105
220	.10	-.001	.1008	14.73	14.73	15.32	16.13	1.99	2.02	2.19	1.49	1.37	1.49	106.3	106.3	100.9	88.2	0.0	9.6	.105	.107	.110
222	.11	-.008	.1007	14.11	14.11	16.37	16.63	2.05	2.08	2.08	1.53	1.38	1.51	106.5	106.5	117.4	86.6	0.0	172.8	.107	.110	.110
225	.12	-.026	.0891	13.68	13.68	16.83	15.79	2.10	1.97	1.99	1.58	1.38	1.50	106.5	110.0	118.9	85.1	55.2	124.4	.110	.107	.107
226	.11	-.029	.0832	14.04	14.04	16.85	15.71	2.11	1.76	2.06	1.58	1.47	1.49	106.4	111.2	118.7	85.1	76.7	116.1	.110	.107	.110
228	.10	.070	.1667	13.69	13.69	16.70	15.56	2.09	1.95	2.03	1.33	1.39	1.52	104.7	109.2	117.0	61.6	71.0	124.2	.108	.105	.108
229	.10	.070	.1668	13.70	13.73	17.19	16.55	2.15	2.07	2.03	1.33	1.41	1.53	104.3	108.0	115.3	56.1	60.1	124.8	.110	.109	.107
230	.11	.005	.1114	13.76	13.96	15.87	15.74	1.98	1.37	2.06	1.49	1.37	1.50	106.6	111.0	118.8	98.2	65.2	117.6	.105	.107	.110
232	.10	.073	.1593	13.88	13.68	15.72	15.52	1.37	1.96	2.02	1.32	1.38	2.52	105.6	110.2	118.6	72.7	69.5	123.7	.103	.106	.108
234	.12	-.029	.0356	13.72	13.72	16.33	16.18	2.10	2.22	1.99	1.58	1.52	1.49	106.5	111.2	119.3	85.1	75.0	123.5	.110	.110	.107
235	.12	-.026	.0997	13.68	13.88	16.83	15.24	2.10	2.03	2.00	1.58	1.38	1.50	106.5	110.3	118.3	85.1	59.6	124.6	.110	.110	.107
236	.11	-.010	.1018	13.70	13.73	16.34	16.29	2.04	2.04	2.00	1.53	1.38	1.50	106.7	110.4	118.4	86.6	58.6	124.1	.107	.110	.107
237	.10	.072	.1586	13.70	13.73	16.56	16.53	2.07	2.07	2.03	1.33	1.40	1.52	104.8	108.6	116.5	62.9	59.2	124.5	.107	.110	.107
239	.10	.038	.1391	12.91	12.91	14.77	14.43	1.85	1.80	1.87	1.30	1.35	1.40	106.8	112.5	121.8	83.0	90.5	126.7	.099	.102	.104
240	.10	.037	.1382	12.88	12.88	14.77	14.43	1.85	1.80	1.87	1.30	1.35	1.40	106.8	112.5	121.8	83.0	80.5	125.9	.099	.102	.104
241	.11	-.016	.0960	13.06	13.05	15.62	15.45	1.95	1.73	1.89	1.46	1.36	1.42	107.2	111.7	120.4	88.8	67.7	126.9	.104	.107	.104
242	.11	-.023	.0900	12.99	12.39	15.65	14.42	1.96	1.80	1.87	1.47	1.35	1.40	107.2	112.6	121.3	88.7	30.5	126.4	.104	.102	.104
244	.12	-.049	.0689	13.31	13.31	15.80	15.66	2.10	1.96	1.92	1.57	1.47	1.42	106.7	111.5	119.9	85.1	76.7	124.1	.110	.108	.105
245	.12	-.041	.0770	13.33	13.33	16.80	15.76	2.10	1.37	1.93	1.57	1.37	1.45	106.7	110.8	119.2	85.1	65.2	126.2	.110	.108	.105
246	.12	-.043	.0751	13.15	13.15	16.60	15.53	2.08	1.94	1.90	1.56	1.33	1.42	106.9	111.1	119.7	85.6	67.7	126.9	.109	.107	.104
248	.10	.040	.1408	13.01	13.01	15.87	14.62	1.99	1.83	1.90	1.32	1.37	1.42	105.7	111.0	120.2	70.5	30.5	126.7	.104	.102	.104
249	.10	.031	.1338	13.61	13.61	14.39	14.69	1.87	1.84	1.99	1.40	1.35	1.49	107.0	112.4	112.4	91.0	76.7	0.0	.101	.103	.106
251	.11	-.020	.0881	14.15	14.15	16.37	16.17	2.05	2.02	2.07	1.53	1.52	1.47	106.4	111.3	111.3	86.6	75.0	0.0	.108	.110	.107
252	.11	.003	.1118	13.62	13.62	15.75	15.60	1.97	1.95	1.98	1.48	1.37	1.49	106.8	111.3	111.3	88.5	66.5	0.0	.105	.107	.105
253	.10	.025	.1315	13.35	13.35	14.71	14.37	1.84	1.80	1.94	1.38	1.35	1.46	107.2	113.0	113.0	91.8	80.5	0.0	.099	.102	.104
254	.11	.035	.1124	12.85	12.85	14.67	14.33	1.83	1.79	1.85	1.38	1.34	1.39	107.5	113.3	113.3	91.8	80.5	0.0	.099	.102	.101
255	.10	.040	.1372	13.35	13.35	14.62	14.41	1.83	1.80	1.95	1.30	1.35	1.46	106.7	110.3	110.3	85.1	49.4	0.0	.099	.101	.103
256	.11	-.034	.0873	13.79	13.79	15.83	15.99	2.10	1.96	2.00	1.58	1.47	1.47	106.5	111.3	111.3	85.1	76.7	0.0	.110	.108	.105
258	.11	-.032	.0826	13.02	13.02	15.98	14.78	2.00	1.85	1.87	1.50	1.39	1.40	107.1	112.3	112.3	87.6	79.4	0.0	.106	.103	.101
259	.12	-.028	.0882	13.60	13.60	16.82	15.79	2.10	1.97	1.98	1.58	1.38	1.49	106.6	110.6	113.5	85.1	55.2	43.5	.110	.108	.105
260	.12	-.025	.0893	13.62	13.62	16.60	15.80	2.10	1.94	1.97	1.56	1.37	1.48	106.6	110.9	110.9	85.2	57.9	0.0	.109	.106	.104
261	.11	.000	.1095	13.61	13.61	15.83	15.08	1.98	1.83	1.98	1.49	1.36	1.49	106.8	112.0	112.0	88.2	78.3	0.0	.105	.103	.105
262	.11	-.024	.0896	12.95	12.95	15.64	14.42	1.96	1.80	1.86	1.47	1.35	1.40	107.2	112.6	112.6	88.7	80.5	0.0	.104	.102	.101
263	.11	-.031	.1082	13.45	13.45	15.68	14.45	1.36	1.81	1.96	1.47	1.36	1.47	106.9	112.3	112.3	88.7	30.5	0.0	.104	.102	.104
264	.10	.061	.1583	13.47	13.47	15.71	14.58	1.96	1.82	1.97	1.32	1.37	1.48	105.7	109.0	109.0	72.6	49.4	0.0	.103	.101	.103
266	.11	-.022	.0845	14.38	14.38	16.39	16.41	2.05	2.05	2.10	1.54	1.34	1.47	106.3	109.2	108.2	86.6	29.2	0.0	.108	.110	.108
269	.11	.008	.1149	13.64	13.64	15.62	15.61	1.95	1.95	1.98	1.46	1.36	1.49	106.7	109.2	109.2	98.9	34.6	0.0	.104	.106	.104
270	.11	-.022	.0915	13.64	13.64	16.49	15.55	2.06	1.94	1.97	1.55	1.37	1.48	106.6	109.0	109.0	88.1	36.4	0.0	.104	.106	.103
273	.09	.075	.1685	14.13	14.13	15.81	15.95	1.98	1.99	2.09	1.32	1.38	1.52	100.0	100.0	106.9	0.0	0.0	105.3	.101	.104	.106
275	.10	.045	.1442	13.31	13.31	15.81	15.95	1.98	1.39	1.95	1.32	1.38	1.44	100.0	100.0	107.4	0.0	0.0	111.4	.101	.104	.101
276	.10	.036	.1369	12.90	12.90	14.56	14.38	1.82	1.80	1.87	1.30	1.35	1.40	100.0	102.2	110.5	0.0	30.0	114.1	.095	.098	.100
277	.10	.071	.1673	13.80	13.80	16.43	15.51	2.05	1.94	2.03	1.32	1.38	1.52	100.0	100.0	107.5	0.0	0.0	110.4	.104	.102	.104
279	.10	.041	.1414	13.12	13.12	16.37	15.44	2.05	1.83	1.91	1.32	1.38	1.43	100.0	100.0	107.8	0.0	0.0	114.8	.104	.101	.100
280	.10	.069	.1652	13.74	13.74	16.37	15.44	2.05	1.93	2.01	1.32	1.38	1.51	100.0	100.0	107.6	0.0	0.0	112.1	.104	.101	.104
281	.10	.036	.1371	13.01	13.01	15.62	14.52	1.95	1.81	1.89	1.31	1.36	1.41	100.0	101.2	109.5	0.0	17.9	114.1	.100	.098	.100
282	.10	.049	.1478	13.11	13.11	14.32	14.33	1.79	1.79	1.90	1.30	1.34	1.43	107.1	107.1	110.9	88.5	0.0	52.1	.097	.100	.102
283	.10	.049	.1478	13.23	13.23	15.40	14.47	1.93	1.81	1.92	1.31	1.36	1.44	106.0	106.0	109.8	76.0	0.0	52.1	.102	.100	.102
285	.10	.035	.1363	12.95	12.95	15.48	14.48	1.93	1.81	1.87	1.31	1.36	1.41	101.5	101.5	109.9	18.6	0.0	114.8	.100	.098	.100
286	.10	.019	.1221	12.81	12.81	14.24	14.26	1.78	1.79	1.84	1.34	1.34	1.38	107.7	107.7	111.6	93.2	0.0	53.4	.097	.100	.100
288	.10	.035	.1361	12.83	12.83	14.30	14.30	1.79	1.79	1.85	1.30	1.34	1.39	107.3	107.3	116.7	89.5	0.0	123.5	.097	.100	.102
289	.10	.005	.1226	13.63	13.63	15.30	16.64	1.97	1.83	1.78	1.47	1.35	1.49	106.8	109.9	109.9	88.6	46.1	0.0	.104	.102	.104
292	.11	-.004	.0974	14.22	14.22	15.72	16.05	1.99	2.01	2.17	1.49	1.50	1.48	106.3	106.3	108.0	88.2	0.0	25.0	.105	.107	.110
293	.11	-.008	.1139	14.01	14.01	15.89	16.08	1.98	2.01	2.07	1.49	1.37	1.51	106.6	106.6	118.5	88.2	0.0	111.0	.105	.107	.110
294	.11	-.028	.0869	13.76	13.76	16.33	16.30	2.10	2.07	1.99	1.58	1.55	1.49	106.5	106.5	119.3	85.4	0.0	200.4	.110	.110	.108
297	.11	-.014	.0982	13.67	13.67	15.42	15.32	2.05	1.91	1.99	1.54	1.37	1.50	106.6	111.2	119.7	86.3	70.6	124.0	.108	.105	.108
298	.12	-.029	.0865	13.67	13.67	16.83	15.66	2.10	1.96	1.98	1.58	1.47	1.49	106.5	111.3	119.7	85.1	76.7	124.4	.110	.107	.107
299	.11	.015	.1213	13.67	13.67	15.55	15.36	1.94	1.92	2.00	1.46	1.36	1.50	106.9	111.6	120.0	99.1	69.3	123.7	.103	.106	.108
300	.11	.002	.1086	13.94	13.94	15.87	15.63	1.98	1.95	2.04	1.49	1.47	1.49	106.7	111.7	119.7	98.2	76.7	117.8	.105	.107	.110
303	.12	-.029	.0861	13.67	13.67	16.93	16.12	2.10	2.01	1.99	1.58	1.51	1.49	106.5	111.3	119.4	85.1	75.2	124.6	.110	.110	.107
304	.11	-.010	.1023	13.63	13.68	16.32	16.27	2.04	2.03	2.00	1.53	1.38	1.50	106.7	110.5	119.5	86.7	58.8	124.4	.107	.110	.107
306	.11	.007	.1136	12.89	12.89	14.67	14.34	1.83	1.79	1.66	1.38	1.34	1.39	107.5	113.3	122.6	91.8	30.5	126.2	.099	.102	.104
307	.11	.006	.1127	12.87	12.87	14.67	14.33	1.83	1.79	1.86	1.38	1.34	1.39	107.5	113.3	122.6	91.8	80.5	126.9	.099	.102	.104
312	.12	-.040	.0726	13.14	13.14	16.60	15.75	2.03	1.93	1.89	1.56	1.45	1.42	106.9	111.8	120.4	95.6	77.3	126.9	.109	.107	.104
313	.10	.030	.1330	13.61	13.61	14.99	14.67	1.87	1.83	1.99	1.41	1.38	1.43	107.0	112.6	112.6	90.4	79.6	0.0	.101	.103	.106
314	.11	.000	.1088	13.61	13.61	15.76	15.51	1.97	1.94	1.97	1.48	1.45	1.48	106.8	112.0	112.0	88.5	77.0	0.0	.105	.107	.105
316	.10	.033	.1355	13.33	13.33	14.54	14.66	1.82	1.79	1.94	1.36	1.34	1.46	107.3	110.9	110.9	92.3	49.4	0.0	.098	.101	.103
317	.11	-.028	.0868	13.61	13.61	16.63	15.48	2.08	1.93	1.97	1.56	1.45	1.47	106.6	111.5	111.5	85.7	77.3	0.0	.109	.107	.104
318	.12	-.032	.0833	13.63	13.61	16.82	15.68	2.10	1.36	1.97	1.58	1.47	1.48	106.6	111.4	114.1	85.1	76.7	40.9	.110	.107	.105
320	.11	-.003	.1109	13.44	13.44	15.52	15.41	1.94	1.86	1.95	1.45	1.35	1.46	107.0	110.3	110.3	89.2	49.4	0.0	.103	.101	.103
321	.11	-.025	.0890	13.64	13.64	16.50	15.67	2.06	1.93	1.96	1.55	1.45	1.47	106.6	109.6	109.6	86.1	48.1	0.0	.108	.106	.103
322	.11	.005	.1118	13.63	13.63	15.63	15.52	1.95	1.94	1.97	1.47	1.45	1.48	106.9	109.9	109.9	88.9	45.4	0.0	.104	.106	.104
323	.10	.035	.1369	13.63	13.63	14.88	14.68	1.86	1.83	1.99	1.39	1.38	1.49	107.1	110.4	110.4	91.4	47.3	0.0	.100	.102	.109
326	.10	.077	.1718	13.79	13.79	16.40	15.64	2.05	1.96	2.03	1.31	1.37	1.52	100.0	100.5	108.1	0.0	7.9	111.5	.100	.102	.105
329	.10	.042	.1430	13.06	13.06	16.52	15.02	1.94	1.95	1.90	1.31	1.37	1.43	100.5	100.5	108.2	6.1	0.0	114.8	.100	.103	.100
330	.10	.053	.1520	13.31	13.31	15.81	15.05	1.99	1.99	1.95	1.32	1.38	1.46	100.0	100.0	107.5	0.0	0.0	114.0	.101	.104	.101
333	.10	.038	.1385	12.90	12.90	14.56	14.38	1.82	1.80	1.87	1.30	1.35	1.40	100.0	102.2	110.6	0.0	30.0	114.4	.095	.098	.100
334	.1.	.037	.1379	12.99	12.99	15.48	14.48	1.93	1.81	1.88	1.31	1.36	1.41	101.5	101.5	109.8	18.6	0.0	114.6	.100	.098	.100
339	.10	.018	.1223	12.82	12.32	14.24	14.25	1.78	1.78	1.85	1.34	1.34	1.33	107.6	107.6	117.1	93.2	0.0	128.5	.097	.100	.102
339	.10	.017	.1210	12.83	12.83	14.29	14.28	1.79	1.78	1.85	1.34	1.34	1.39	102.9	102.9	111.4	35.8	0.0	114.8	.095	.099	.100
340	.11	.004	.1121	13.63	13.63	15.72	15.63	1.97	1.83	1.98	1.47	1.37	1.49	106.8	110.1	110.1	88.6	48.1	0.0	.104	.102	.104
341	.11	.017	.1229	13.75	13.75	15.59	15.76	1.95	1.87	2.01	1.46	1.36	1.51	106.8	106.8	119.5	39.0	0.0	190.0	.104	.106	.109
343	.11	.004	.1105	13.99	13.99	15.87	15.80	1.98	2.00	2.05	1.49	1.50	1.50	106.6	106.6	119.5	88.2	0.0	196.0	.105	.107	.110
347	.11	-.016	.0963	13.67	13.67	16.43	15.29	2.05	1.91	1.99	1.54	1.43	1.49	106.6	111.6	120.2	86.3	78.0	124.0	.103	.105	.108
349	.11	.012	.1159	13.56	13.66	15.56	15.29	1.93	1.91	1.99	1.46	1.43	1.43	106.3	112.1	122.5	59.1	77.7	123.6	.104	.106	.109
352	.10	.017	.1216	12.83	12.83	14.29	14.28	1.79	1.78	1.65	1.34	1.34	1.39	102.3	102.3	112.1	35.8	0.0	124.9	.095	.098	.100